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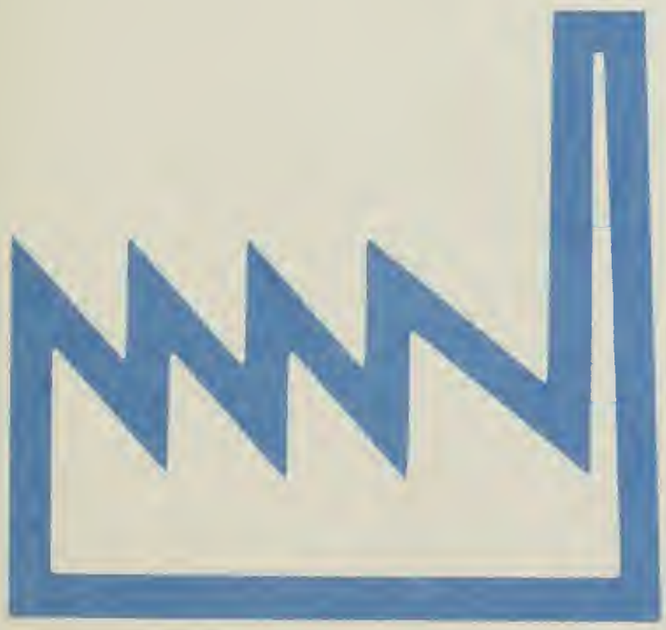
# 1982 Census of Manufactures

MC82-I-35E

INDUSTRY SERIES

# General Industrial Machinery and Equipment

Industries 3561, 3562, 3563, 3564, 3565, 3566, 3567, 3568, and 3569



U.S. Department of Commerce
BUREAU OF THE CENSUS

The publications
from the 1982 Economic and
Agriculture Censuses are dedicated
to the memory of Shirley Kallek,
Associate Director for Economic Fields.
During her career at the Bureau of the
Census (1955 to 1983), she continually
directed efforts to improve
the timeliness and accuracy of
economic statistics.

# 1982 Census of Manufactures

MC82-I-35E

INDUSTRY SERIES

# General Industrial Machinery and Equipment

| | |
|---|---|
| 3561 | Pumps and Pumping Equipment |
| 3562 | Ball and Roller Bearings |
| 3563 | Air and Gas Compressors |
| 3564 | Blowers and Fans |
| 3565 | Industrial Patterns |
| 3566 | Speed Changers, Drives, and Gears |
| 3567 | Industrial Furnaces and Ovens |
| 3568 | Power Transmission Equipment, N.E.C. |
| 3569 | General Industrial Machinery, N.E.C. |

Issued March 1985

**U.S. Department of Commerce**
**Malcolm Baldrige,** Secretary
**Clarence J. Brown,** Deputy Secretary
**Sidney Jones,** Under Secretary for Economic Affairs

**BUREAU OF THE CENSUS**
**John G. Keane,**
Director

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This report was prepared in the Industry Division under the general direction of **Roger H. Buganhagan**, Chief (until April 1983), and **Gaylord E. Worden**, his successor. **John P. Govoni**, Assistant Chief for Census/Annual Survey of Manufactures (ASM) Programs, was responsible for the overall management of the census of manufactures. He guided the planning and implementation of the project and coordinated activities with other divisions.

Program responsibility was shared by the following individuals who participated importantly in the entire program: **John P. McNamee**, Chief, Minerals Branch; **Dale W. Gordon**, Chief, Census/ASM Durables Branch; **Michael J. Zampogna**, Chief, Census/ASM Nondurables Branch; **Bernard J. Fitzpatrick**, Chief, Census Special Reports Branch (until April 1983); and **Bruce M. Goldhirsch**, his successor; **Kenneth I. Hansen**, Chief, Annual Survey of Manufactures Branch; **Malcolm E. Bernhardt**, Chief, Current Durables Branch; and **Carole A. Amblar**, Chief, Current Nondurables Branch.

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If you have any questions concerning the statistics in this report, call (301) 763-7304.

# INTRODUCTION

## ECONOMIC CENSUSES OVER TIME

The early beginnings of America's industrial output were first measured in the United States in the 1810 Decennial Census and again in 1820, when questions on manufacturing were included with those for population. Beginning with the 1840 Decennial Census, there were enumerations of manufactures and mineral industries at 10-year intervals up to and including the year 1900 for manufactures and 1940 for mineral industries. The latter census was again taken for 1954, 1958, 1963, and 1967.

Because of the increasing dominance of manufacturing in the early 20th century, Congress directed that quinquennial censuses of manufactures be taken beginning in 1905. However, from 1919 through 1939, these censuses were conducted every 2 years. The need for war-related current surveys in the early 1940's postponed the next census of manufactures until 1948 (for 1947). That census was again taken for 1954, 1958, 1963, and 1967.

Retail and wholesale trade data were first collected in 1930, and in 1933 information on selected service industries was added to the data-collection operation. These business censuses, as they were called, were again taken for 1935, 1939 (as part of the 1940 decennial program), 1948, 1954, 1958, 1963, and 1967.

Information on construction industries was obtained first in 1930 and again for 1935 and 1939. Data for the full spectrum of construction industries were not gathered again until 1968 (for 1967).

The need for transportation data to supplement information available from existing governmental or private sources was recognized by Congress in the late 1950's and early 1960's. The census of transportation (consisting of several surveys) was taken first for 1963 and again for 1967.

Since 1967, all of the above censuses have been taken quinquennially as part of the Census Bureau's economic census program. (For the 1977 censuses, the coverage of the service industries was broadened from "selected services" to "all services, except religious organizations and private households." A total of 41 additional four-digit standard industrial classifications[1] (SIC's) in 7 SIC major groups was added to the scope of the census. While most of the industries included for the first time for 1977 were covered again for 1982, some were not, i.e., hospitals; elementary and secondary schools; colleges, universities, and professional schools; junior colleges and technical institutes; labor unions and similar labor organizations; and political organizations.)

The first manufacturing census for an outlying area was conducted in Puerto Rico for the year 1909. Thereafter, with the exception of 1929, a census was taken at 10-year intervals through 1949. The first censuses of retail trade, wholesale trade, and selected service industries in Puerto Rico were conducted for 1939. These censuses also were taken for the years 1949, 1954, 1958, 1963, and 1967. A census of construction industries was introduced first in Puerto Rico for 1967. These censuses of Puerto Rico have been taken since then for the years 1972, 1977, and 1982.

Censuses of manufactures, retail trade, wholesale trade, and selected service industries were conducted in Guam and the Virgin Islands of the United States for 1958, 1963, 1967, 1972, 1977, and 1982. Censuses of mineral industries were taken in the Virgin Islands of the United States for the years 1958, 1963, and 1967 but not since that time. A census of construction industries was also undertaken in these areas for 1972, 1977, and 1982.

Retail trade, wholesale trade, selected service industries, manufacturing, and construction industries were canvassed for the first time in the Northern Mariana Islands in 1983 (for 1982).

For 1982, the economic censuses and agriculture censuses were conducted concurrently.

## USES OF THE ECONOMIC CENSUSES

The economic censuses are the major source for facts about the structure and functioning of the Nation's economy and provide essential information for government, business, industry, and the general public. They provide an important part of the framework for such composite measures as the gross national product, input-output measures, indexes of industrial production, and indexes measuring productivity and price levels. Information from the censuses is used to establish sampling frames and as benchmarks for current surveys of business activity, which are essential for measuring short-term economic conditions.

State and local governments use census data to assess business activities within their jurisdictions. The private sector uses the data to forecast general economic conditions; analyze sales performance; lay out sales territories; allocate funds for advertising; decide on locations for new plants, warehouses, or stores; and measure potential markets in terms of size, geographic areas, kinds of business, and kinds of products made or sold.

Following every census, thousands of businesses and other users purchase reports. Likewise, census facts are disseminated widely by trade associations, business journals, and newspapers. Volumes containing census statistics are available in most major public and college libraries. All 1982 data are available on microfiche from the U.S. Government Printing Office and most data on computer tape from the Census Bureau. Finally, the more than 50 State Data Centers also are suppliers of economic census statistics.

## AUTHORITY AND SCOPE OF THE ECONOMIC CENSUSES

The economic censuses are required by law under title 13 of the United States Code, sections 131, 191, and 224, which directs that they be taken at 5-year intervals for the years ending in 2 and 7. The 1982 Economic Censuses covered manufacturing, mining, construction industries, retail trade, wholesale trade, service industries, and selected transportation activities. Special programs also cover minority-owned and women-owned businesses. The next economic censuses are scheduled to be taken in 1988 for the year 1987.

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[1]**Standard Industrial Classification Manual: 1972.** For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 041-001-00066-6. **1977 Supplement.** Stock No. 003-00500176-0.

## CENSUS OF MANUFACTURES

### General

The 1982 Census of Manufactures is the 31st census of manufactures of the United States. For 1982, it was conducted jointly with the censuses of mineral industries, construction industries, retail and wholesale trades, service industries, selected transportation activities, and minority-owned and women-owned businesses.

This report, from the 1982 Census of Manufactures, is one of a series of 82 industry reports, each of which provides statistics for groups of related industries. Additional separate reports will be issued for each State and on special subjects, such as size of establishments, legal form of organization, and fuels and electric energy consumed.

These separate reports will subsequently be issued as portions of the final census volumes. Volume I, Subject Statistics, will show comparative statistics for industries, States, and standard metropolitan statistical areas. It also will show selected subjects, such as concentration ratios in manufacturing, selected materials consumed, manufacturing activity in government establishments, and water use in manufacturing. Volume II, Industry Statistics, will be a consolidation of reports for the 82 groups of industries showing the same information that is shown in this report. Volume III, Geographic Area Statistics, will contain establishment-based data (number of establishments, employment, payroll, value added by manufacture, and capital expenditures) for each State and its important standard metropolitan statistical areas, counties, and places, by industry groups and important individual industries. Totals for "all manufacturing" will be shown for counties and places with more than 450 manufacturing employees. The introduction to the final volumes will discuss, at greater length, many of the subjects described in this introduction. For example, the volume text will discuss the relationship of value added by manufacture to National income by industry of origin, the changes in statistical concepts over the history of the censuses, and the valuation problems arising from intracompany transfers between manufacturing plants of a company and between manufacturing plants and sales offices and sales branches of a company.

### Scope of Census and Definition of Manufacturing Industries

The 1982 Census of Manufactures covers all establishments employing one person or more primarily engaged in manufacturing as defined in the 1972 Standard Industrial Classification (SIC) Manual and its 1977 Supplement.[1] This is the system of industrial classification developed over a period of years by experts on classification in government and private industry under the guidance of the Office of Management and Budget. This system of classification is in general use among government agencies as well as organizations outside the government.

The SIC manual defines manufacturing as the mechanical or chemical transformation of inorganic or organic substances into new products. The assembly of component parts of products is also considered to be manufacturing if the resulting product is neither a structure nor other fixed improvement. These activities are usually carried on in plants, factories, or mills that characteristically use power-driven machines and materials handling equipment.

[1]**Standard Industrial Classification Manual: 1972.** For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 041-001-00066-6. **1977 Supplement.** Stock No. 003-00500176-0.

Manufacturing production is usually carried on for the wholesale market, for transfers to other plants of the same company, or to the order of industrial users rather than for direct sale to the household consumer. Some manufacturers in a few industries sell chiefly at retail to household consumers through the mail, through house-to-house routes, or through salespersons. Some activities of a service nature (enameling, engraving, etc.) are included in manufacturing when they are performed primarily for the trade. They are considered nonmanufacturing when they are performed primarily to the order of the household consumer.

### Relationship Between Annual Survey of Manufactures and Census of Manufactures

The Bureau of the Census conducts the annual survey of manufactures (ASM) in each of the 4 years between the censuses of manufactures. The ASM is based on a scientifically selected sample of approximately 55,000 establishments and collects the same industry statistics (employment, payroll, value of shipments, etc.) as the census of manufactures. In addition to collecting the information normally requested on the census form, the establishments in the ASM sample are requested to supply detailed information on assets, capital expenditures, retirements, depreciation, rental payments, supplemental labor costs, and costs of purchased services.

### Establishment Basis of Reporting

The census of manufactures and the annual survey of manufactures are conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1982, as in earlier years, a minimum size limit was set for including establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than $5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

This report excludes information for separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company (see Auxiliaries).

### Manufacturing Universe and Census Report Forms

The 1982 Census of Manufactures universe includes approximately 345,000 establishments. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures. The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in this publication are described below.

**1. Small Single-Unit Companies Not Sent a Report Form**

In the 1982 Census of Manufactures, approximately 140,000 small single-establishment companies were excused from filing reports. Selection of these small

establishments was done on an industry-by-industry basis and was based on annual payroll and total shipments data as well as on the industry classification codes contained in the administrative records of other Federal agencies. The cutoffs were selected so that these administrative records cases would account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed report forms.

Information on the physical location of the establishment, as well as information on payrolls, receipts (shipments), and industry classification, was obtained from the administrative records of other Federal agencies under special arrangements, which safeguarded their confidentiality. Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these establishments but were included in the product and material "not specified by kind" (n.s.k.) categories.

The industry classification codes included in the administrative records files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to the four-digit SIC level. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes these administrative record cases were given only a two- or three-digit SIC group. For the 1982 Census of Manufactures, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the four-digit SIC level. Establishments that did not return the classification form were coded later to those four-digit SIC industries identified as "not elsewhere classified" (n.e.c.) within the given two- or three-digit industry groups.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassifications have no significant effect on the statistics other than on the number of establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

**2. Establishments Sent a Report Form**

The 205,000 establishments covered in the mail canvass were divided into three groups:

a. **ASM sample establishments**—This group consisted of approximately 55,000 establishments covering all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size (see appendix, Annual Survey of Manufactures).

In a census of manufactures year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply information on assets, capital expenditures, retirements, depreciation, rental payments, supplemental labor costs, and costs of purchased services. Results of the ASM inquiries are included in tables 3c and 3d of this report.

The census part of the report form is one of approximately 200 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the approximately 450 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries, as well as secondary products and miscellaneous services that establishments classified in these industries were likely to be performing. Respondents were requested to identify the products, the value of each product, and, in a large number of cases, the quantity of the product shipped during the survey year. Space was also provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry, which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

Finally, a wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. **Large and medium establishments (non-ASM)**—Approximately 100,000 establishments were included in this group. A variable cutoff, based on administrative records payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive one of the approximately 200 census of manufactures regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. **Small single-unit establishments (non-ASM)**—This group consisted of approximately 50,000 establishments. For those industries where application of the variable cutoff for administrative records cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or "short" form was used. These establishments received one of the approximately 80 versions of the short form, which requested summary product and material data and totals but no details on employment, payrolls, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics; the same

data were collected on the short as well as the long form. However, detailed information on materials consumed was not collected on the short form; thus its use would increase the values of the n.s.k. categories.

## Auxiliaries

In this industry report, the data on employment and payroll are limited to operating manufacturing establishments. The census report form filed for auxiliaries (ES-9200) requested a description of the activity of the establishments serviced. However, the auxiliaries were coded only to the two-digit major group of the establishments they served; whereas, the operating establishments were coded to a four-digit manufacturing industry. Data for the approximately 10,000 separately operated auxiliaries are included in the paperbound geographic area series, the bound volumes of the census of manufactures, and in a report issued as part of the 1982 Enterprise Statistics survey.

Auxiliaries are establishments whose employees are primarily engaged in performing supporting services for other establishments of the same company, rather than for the general public or for other business firms. They can be at different locations from the establishments served or at the same location as one of those establishments but not operating as an integral part thereof and serving two or more establishments. Where auxiliary operations are conducted at the same location as the manufacturing operation and operate as an integral part thereof, they usually are included in the report for the operating manufacturing establishment.

Included in the broad category of auxiliaries are administrative offices. Employees in administrative offices are concerned with the general management of multiestablishment companies, i.e., with the general supervision and control of two units or more, such as manufacturing plants, mines, sales branches, or stores. The functions of these employees may include (1) program planning, including sales research and coordination of purchasing, production, and distribution; (2) company purchasing, including general contracts and purchasing methods; (3) company financial policy and accounting, tax accounting, company sales and profit reports, and personnel accounting; (4) general engineering, including design of product machinery and equipment, and direction of engineering effort conducted at the individual operation locations; (5) direction of company personnel matters; and (6) legal and patent matters.

Other types of auxiliaries serving the plants or central management of the company include purchasing offices, sales promotion offices, research and development organizations, etc.

## Industry Classification of Establishments

Each of the establishments covered in the census was classified in one of approximately 450 manufacturing industries in accordance with the industry definitions in the SIC system. Under this system of classification, an industry is generally defined as a group of establishments producing a single product or a closely related group of products. The product groupings from which industry classifications are derived are based on considerations such as similarity of manufacturing processes, types of materials used, types of customers, and the like. The resulting group of plants must be significant in terms of its number, value added by manufacture, value of shipments, and number of employees. The system operates in such a way that the definitions progressively became narrower with successive additions of numerical digits. There are 20 major groups (two-digit SIC), 143 industry groups (three-digit SIC), and approximately 450 industries (four-digit SIC). The product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. There are about 1,500 classes of products, identified by a five-digit code, and about 11,000 products, identified by a seven-digit code. The seven-digit products are considered the primary products of the industry with the same four digits.

Accordingly, an establishment is usually classified in a particular industry on the basis of its major activity during a particular year, i.e., production of the products primary to that industry exceeds, in value, production of the products primary to any other single industry. In a few instances, however, the industry classification of an establishment is not only determined by the products it makes but also by the process employed in making those products. For example, establishments engaged in blast furnace operations, refining of nonferrous metals from ore, or rolling and drawing of nonferrous metals (processes which involve heavy capitalization in specialized equipment) would be classified according to the process used during a census year. These establishments then would be "frozen" in that industry during the following ASM years.

In either a census or ASM year, establishments included in the ASM sample with certainty weight, other than those involved with heavily capitalized activities described above, are reclassified by industry only if the change in the primary activity from the prior year is significant or the change has occurred for two successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year (see appendix, Annual Survey of Manufactures). However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The result of these rules covering the switching of plants from one industry classification to another is that, at the aggregate level, some industries comprise different mixes of establishments between survey years, and establishment data for such industry statistics as employment and payroll may be tabulated in different industries between survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the four-digit SIC level, should be viewed with caution. This is true particularly for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of establishments.

While some establishments produce only the primary products of the industry in which they are classified, all establishments of an industry rarely specialize to this extent. The industry statistics (employment, inventories, value added by manufacture, total value of shipments including resales and miscellaneous receipts, etc.) shown in tables 1a through 5a, therefore, reflect not only the primary activities of the establishments in that industry but also their secondary activities. The product statistics in tables 6a through 6c represent the output of all establishments whether or not they are classified in the same industry as the product. For this reason, in relating the industry statistics, especially the value of shipments to the product statistics, the

composition of the industry's output shown in table 5b should be considered.

The extent to which industry and product statistics may be matched with each other is measured by two ratios, which are computed from the figures shown in table 5b. The first of these ratios, called the primary product specialization ratio, measures the proportion of product shipments (both primary and secondary) of the establishments classified in the industry represented by the primary products of those establishments. The second ratio, called the coverage ratio, is the proportion of primary products shipped by the establishments classified in the industry to total shipments of such products by all manufacturing establishments.

However, establishments making products falling into the same industry category may use a variety of processes and materials to produce them. Also, the same industry classification (based on end products) may include both establishments that are highly integrated and those that put only the finishing touches on an already highly fabricated item. For example, the refrigeration industry includes instances of almost complete integration (production of the compressor, condensing unit, electric motor, casting, stamping of the case, and final assembly) all carried on at one plant. On the other hand, the condensing unit, the motor, and the case may be purchased and only assembled into the finished product.

In some instances, separate industry categories have been established for integrated and nonintegrated establishments. For other industries, the census provides separate statistics on the production of intermediate commodities made and used in the producing plant. For some industries characterized by many plants of the same company, separate figures on interplant transfer of products usually are shown.

Differences in the integration of production processes, types of operations, and alternatives in types of materials used should be considered when relating the industry statistics (employment, payrolls, value added, etc.) to the product and material data.

### Value of Shipments for the Industry Compared With Value of Product Shipments

This industry report shows value of shipments data for industries and products. In tables 1a through 5a, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Product shipments shown in table 6a represent the total value of shipments of products classified as primary to an industry that were shipped by all manufacturing establishments regardless of their industry classification.

## CENSUS DISCLOSURE RULES

In accordance with Federal law governing census reports, no data are published that would disclose the data for an individual establishment or company. However, the number of establishments classified in a specific industry is not considered a disclosure, so this item may be given even though other information is withheld.

The disclosure analysis for the industry statistics in tables 1a through 5a of this report is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line has been suppressed. However, the suppressed data are included in higher level totals. Additional disclosure analysis is performed for new capital expenditures that can be suppressed even though value of shipments data are publishable.

## MICROFICHE AND COMPUTER TAPES

All the data in this report are available on microfiche. Selected data are also available on computer tape.

In addition to selected published data being on computer tape, one major data series, the location of manufacturing plants, will be available only on computer tape. This series presents the number of establishments by employment size class by four-digit SIC industry codes for States, counties, and places of 2,500 inhabitants or more. These data are available for both State and county by industry, and State and place by industry.

Microfiche reports are sold by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Computer tapes are sold by the Data User Services Division, Customer Services (Tapes), Bureau of the Census, Washington, D.C. 20233.

## SPECIAL TABULATIONS

Special tabulations of data collected in the 1982 Census of Manufactures may be obtained on computer tape or in tabular form. The data will be in summary form and subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) as are the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief, Industry Division, Bureau of the Census, Washington, D.C. 20233.

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used in this publication:

| | |
|---|---|
| - | Represents zero. |
| (D) | Withheld to avoid disclosing data for individual companies; data are included in higher level totals. |
| (NA) | Not available. |
| (NC) | Not comparable. |
| (S) | Withheld because estimate did not meet publication standards on the basis of either the response rate or a consistency review. |
| (X) | Not applicable. |
| (Z) | Less than half the unit shown. |
| n.e.c. | Not elsewhere classified. |
| n.s.k. | Not specified by kind. |
| pt. | Part. |
| r | Revised. |
| SIC | Standard Industrial Classification. |

Other abbreviations, such as lb, gal, yd, doz, bbl, and s tons, are used in the customary sense.

# Users' Guide for Locating Statistics

[For explanation of terms, see appendixes]

| | Item | Four-digit industry statistics | | |
|---|---|---|---|---|
| | | Historical | Operating ratios | By geographic area |
| 1 | Number of companies | 1a | | |
| 2 | Number of manufacturing establishments | 1a | | 2 |
| | Employment and payroll: | | | |
| 3 | Number of employees | 1a | 1b | 2 |
| 4 | Payroll | 1a | 1b | 2 |
| 5 | Supplemental labor costs | | | |
| 6 | Production workers | 1a | 1b | 2 |
| 7 | Production-worker hours | 1a | 1b | 2 |
| 8 | Production-worker wages | 1a | 1b | 2 |
| | Shipments, cost of materials, and value added: | | | |
| 9 | Value of shipments (four-digit) | 1a | 1b | 2 |
| 10 | Product class shipments (five-digit) | | | |
| 11 | Product shipments (seven-digit) | | | |
| 12 | Value added by manufacture | 1a | 1b | 2 |
| 13 | Cost of materials | 1a | 1b | 2 |
| 14 | Fuels and electric energy | | | |
| 15 | Materials consumed by kind | | | |
| | Inventories: | | | |
| 16 | Total, end of year | 1a | | |
| 17 | By method of valuation | | | |
| 18 | By stage of fabrication | | | |
| | Capital expenditures, assets, rental payments, and purchased services: | | | |
| 19 | New capital expenditures | 1a | | 2 |
| 20 | Used plant and equipment expenditures | | | |
| 21 | Gross assets | | | |
| 22 | Depreciation | | | |
| 23 | Retirements of buildings and machinery | | | |
| 24 | Rental payments | | | |
| 25 | Purchased services | | | |
| | Ratios: | | | |
| 26 | Specialization | 1a | | |
| 27 | Coverage | 1a | | |

*Number of companies with shipments of over $100 thousand.
**Detailed information shown.

# in This Report by Table Number

| Four-digit industry statistics—Con. | | | | Five-digit product class and seven-digit product statistics | | | | |
|---|---|---|---|---|---|---|---|---|
| Summary and supplemental | By employment size | By industry and product class specialization | Materials consumed by kind | Industry-product analysis | Product shipments | Product class by geographic area | Historical product class | |
| 3a | | | | | *6a | | | 1 |
| **3a | 4 | 5a | | | | | | 2 |
| 3a | 4 | 5a | | | | | | 3 |
| 3a | 4 | 5a | | | | | | 4 |
| **3d | | | | | | | | 5 |
| **3a | 4 | 5a | | | | | | 6 |
| **3a | 4 | 5a | | | | | | 7 |
| 3a | 4 | 5a | | | | | | 8 |
| 3a | 4 | 5a | | 5b, 5c | | | | 9 |
| | | | | 5b, 5c | 6a | 6b | 6c | 10 |
| | | | | | 6a | | | 11 |
| 3a | 4 | 5a | | | | | | 12 |
| **3a | 4 | 5a | | | | | | 13 |
| 3a, 3d | | | | | | | | 14 |
| | | | 7 | | | | | 15 |
| 3b, 3c | 4 | | | | | | | 16 |
| 3b, 3c | | | | | | | | 17 |
| 3b | | | | | | | | 18 |
| **3a, **3d | 4 | 5a | | | | | | 19 |
| **3a, **3d | | | | | | | | 20 |
| **3d | | | | | | | | 21 |
| **3d | | | | | | | | 22 |
| **3d | | | | | | | | 23 |
| **3d | | | | | | | | 24 |
| **3d | | | | | | | | 25 |
| 3a | | | | 5b | | | | 26 |
| 3a | | | | 5b | | | | 27 |

# General Industrial Machinery and Equipment

## CONTENTS

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# DESCRIPTION OF INDUSTRIES AND SUMMARY OF FINDINGS

## GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT

This report shows 1982 Census of Manufactures statistics for establishments classified in each of the following industries:

**SIC Code and Title**

3561 Pumps and Pumping Equipment
3562 Ball and Roller Bearings
3563 Air and Gas Compressors
3564 Blowers and Fans
3565 Industrial Patterns
3566 Speed Changers, Drives, and Gears
3567 Industrial Furnaces and Ovens
3568 Power Transmission Equipment, N.E.C.
3569 General Industrial Machinery, N.E.C.

The industry statistics (employment, payroll, cost of materials, value of shipments, inventories, etc.) are reported for each establishment as a whole. Aggregates of such data for an industry reflect not only the primary activities of the establishments but also their activities in the manufacture of secondary products as well as their miscellaneous activities (contract work on materials owned by others, repair work, etc.). This fact should be taken into account in comparing industry statistics (tables 1a-5a) with product statistics (table 6a) showing shipments by all industries of the primary products of the specified industry. The extent of the "product mix" is indicated in table 5b, which shows the value of primary and secondary products shipped by establishments classified in the specified industry and the value of primary products of the industry shipped as secondary products by establishments classified in other industries.

Small single-unit companies with up to 20 employees (cutoff varied by industry) were excluded from the mail portion of the census. For these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated), data on payrolls and receipts were obtained from administrative records of other government agencies. The remaining statistics were developed from industry averages.

Establishment data were tabulated based on industry definitions contained in the 1972 Standard Industrial Classification (SIC) Manual and its 1977 supplement.[1]

## INDUSTRY 3561, PUMPS AND PUMPING EQUIPMENT

This industry comprises establishments primarily engaged in the manufacture of pumps and pumping equipment for general industrial use. Establishments primarily engaged in the manufacture of measuring and dispensing pumps for gasoline service-station use are classified in industries 3586 and 3563.

In the 1982 Census of Manufactures, Industry 3561, Pumps and Pumping Equipment, recorded employment of 68.5 thousand. The total value of shipments for establishments classified in this industry was $6,198 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 9 percent above the 63.0 thousand reported in 1977. The leading States in employment in 1982 were Texas, California, Ohio, and Oklahoma, accounting for approximately 41 percent of the industry's 1982 employment. This represents a shift from 1977 when Ohio, California, Illinois, and Texas accounted for approximately 40 percent of the industry's employment.

Compared with 1981, employment decreased 5 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 3561 shipped $5,155 million of products primary to the industry, $596 million of secondary products, and had $447 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 90 percent (specialization ratio). In 1977, this specialization ratio was 88 percent.

Establishments in this industry also accounted for 90 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 88 percent. The products primary to industry 3561, no matter in what industry they were produced, appear in table 6a and aggregate to $5,723 million in current prices.

The total cost of materials and services used by establishments classified in the pumps and pumping equipment industry amounted to $2,742 million in current prices. Data on specific materials consumed appear in table 7.

Establishments of single-unit companies in this industry with up to 10 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 4 percent of total value of shipments.

[1] **Standard Industrial Classification Manual: 1972.** For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 041-001-00066-6. **1977 Supplement.** Stock No. 003-005-00176-0.

## INDUSTRY 3562, BALL AND ROLLER BEARINGS

This industry comprises establishments primarily engaged in the manufacture of ball and roller bearings (including ball or roller bearing pillow block, flange, takeup cartridge, and hanger units) and parts. Establishments primarily engaged in the manufacture of bearings, except ball and roller, are classified in industry 3568.

In the 1982 Census of Manufactures, Industry 3562, Ball and Roller Bearings, recorded employment of 43.7 thousand. The total value of shipments for establishments classified in this industry was $3,136 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 14 percent below the 50.6 thousand reported in 1977. The leading States in employment in 1982 were Ohio, Connecticut, South Carolina, and Indiana, accounting for approximately 55 percent of the industry's 1982 employment. Data for Ohio have been withheld to avoid disclosing data for individual companies. This represents a shift from 1977 when Connecticut, Ohio, South Carolina, and Pennsylvania accounted for approximately 40 percent of the industry's employment.

Compared with 1981, employment decreased 18 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 3562 shipped $2,939 million of products primary to the industry, $121 million of secondary products, and had $76 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 96 percent (specialization ratio). In 1977, this specialization ratio also was 96 percent.

Establishments in this industry also accounted for 99 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 98 percent. The products primary to industry 3562, no matter in what industry they were produced, appear in table 6a and aggregate to $2,973 million in current prices.

The total cost of materials and services used by establishments classified in the ball and roller bearings industry amounted to $1,216 million in current prices. Data on specific materials consumed appear in table 7.

Establishments of single-unit companies in this industry with up to 20 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 1 percent of total value of shipments.

## INDUSTRY 3563, AIR AND GAS COMPRESSORS

This industry comprises establishments primarily engaged in the manufacture of air and gas compressors for general industrial use. Establishments primarily engaged in the manufacture of refrigeration compressors and compressing units are classified in industry 3585.

In the 1982 Census of Manufactures, Industry 3563, Air and Gas Compressors, recorded employment of 32.1 thousand. The total value of shipments for establishments classified in this industry was $3,270 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was virtually the same as the 32.0 thousand reported in 1977. The leading States in employment in 1982 were New York, Pennsylvania, Ohio, and Illinois, accounting for approximately 59 percent of the industry's 1982 employment. These same States were the leaders in 1977, when they accounted for approximately 64 percent of the industry's employment.

Compared with 1981, employment decreased 2 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 3563 shipped $2,603 million of products primary to the industry, $300 million of secondary products, and had $366 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 90 percent (specialization ratio). In 1977, this specialization ratio was 88 percent.

Establishments in this industry also accounted for 91 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 89 percent. The products primary to industry 3563, no matter in what industry they were produced, appear in table 6a and aggregate to $2,846 million in current prices.

The total cost of materials and services used by establishments classified in the air and gas compressors industry amounted to $1,698 million in current prices. Data on specific materials consumed appear in table 7.

Establishments of single-unit companies in this industry with up to 10 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 4 percent of total value of shipments.

## INDUSTRY 3564, BLOWERS AND FANS

This industry comprises establishments primarily engaged in the manufacture of industrial and commercial blowers, industrial and commercial exhaust and ventilating fans, and attic fans. Establishments primarily engaged in the manufacture of airconditioning units are classified in industry 3585, and free-air circulating fans for use on desks, pedestals, or wall brackets, as well as household window-type fans and rollabouts, and kitchen

and household ventilating and exhaust fans are classified in industry 3634.

In the 1982 Census of Manufactures, Industry 3564, Blowers and Fans, recorded employment of 29.8 thousand. The total value of shipments for establishments classified in this industry was $2,174 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 6 percent above the 28.0 thousand reported in 1977. The leading States in employment in 1982 were New York, California, Ohio, and Indiana, accounting for approximately 37 percent of the industry's 1982 employment. These same States were the leaders in 1977, when they accounted for approximately 40 percent of the industry's employment, although there has been some shift in the relative importance of individual States.

Compared with 1981, employment decreased 1 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 3564 shipped $1,827 million of products primary to the industry, $252 million of secondary products, and had $94 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 88 percent (specialization ratio). In 1977, this specialization ratio was 89 percent.

Establishments in this industry also accounted for 92 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 87 percent. The products primary to industry 3564, no matter in what industry they were produced, appear in table 6a and aggregate to $1,995 million in current prices.

The total cost of materials and services used by establishments classified in the blowers and fans industry amounted to $1,000 million in current prices. Data on specific materials consumed appear in table 7.

Establishments of single-unit companies in this industry with up to 10 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 8 percent of total value of shipments.

## INDUSTRY 3565, INDUSTRIAL PATTERNS

This industry comprises establishments primarily engaged in the manufacture of industrial patterns, except shoe patterns.

In the 1982 Census of Manufactures, Industry 3565, Industrial Patterns, recorded employment of 9.8 thousand. The total value of shipments for establishments classified in this industry was $452 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 5 percent above the 9.3 thousand reported in 1977. The leading States in employment in 1982 were Michigan, Ohio, Pennsylvania, and Illinois, accounting for approximately 45 percent of the industry's 1982 employment. Data for Ohio and Pennsylvania have been withheld to avoid disclosing data for individual companies. This represents a shift from 1977 when Michigan, Ohio, Illinois, and Wisconsin accounted for approximately 56 percent of the industry's employment.

Compared with 1981, employment increased 7 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 3565 shipped $429 million of products primary to the industry, $13 million of secondary products, and had $10 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 97 percent (specialization ratio). In 1977, this specialization ratio also was 97 percent.

Establishments in this industry also accounted for 76 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 75 percent. The products primary to industry 3565, no matter in what industry they were produced, appear in table 6a and aggregate to $562 million in current prices.

The total cost of materials and services used by establishments classified in the industrial patterns industry amounted to $98 million in current prices. Data on specific materials consumed appear in table 7.

Establishments of single-unit companies in this industry with up to 5 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 18 percent of total value of shipments.

## INDUSTRY 3566, SPEED CHANGERS, DRIVES, AND GEARS

This industry comprises establishments primarily engaged in the manufacture of speed changers, industrial high-speed drives, and gears. Establishments primarily engaged in the manufacture of these items for motor vehicles are classified in industry 3714.

In the 1982 Census of Manufactures, Industry 3566, Speed Changers, Drives, and Gears, recorded employment of 23.8 thousand. The total value of shipments for establishments classified in this industry was $1,621 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for

changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 6 percent below the 25.3 thousand reported in 1977. The leading States in employment in 1982 were Illinois, Wisconsin, Ohio, and Pennsylvania, accounting for approximately 50 percent of the industry's 1982 employment. This represents a shift from 1977 when Wisconsin, Illinois, Ohio, and Indiana accounted for approximately 55 percent of the industry's employment.

Compared with 1981, employment decreased 7 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 3566 shipped $1,348 million of products primary to the industry, $203 million of secondary products, and had $71 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 87 percent (specialization ratio). In 1977, this specialization ratio also was 87 percent.

Establishments in this industry also accounted for 87 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 84 percent. The products primary to industry 3566, no matter in what industry they were produced, appear in table 6a and aggregate to $1,557 million in current prices.

The total cost of materials and services used by establishments classified in the speed changers, drives, and gears industry amounted to $551 million in current prices. Data on specific materials consumed appear in table 7.

Establishments of single-unit companies in this industry with up to 10 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 3 percent of total value of shipments.

## INDUSTRY 3567, INDUSTRIAL FURNACES AND OVENS

This industry comprises establishments primarily engaged in the manufacture of industrial process furnaces, ovens, induction and dielectric heating equipment, and related devices.

In the 1982 Census of Manufactures, Industry 3567, Industrial Furnaces and Ovens, recorded employment of 16.5 thousand. The total value of shipments for establishments classified in this industry was $1,131 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 8 percent above the 15.2 thousand reported in 1977. The leading States in employment in 1982 were Ohio, Pennsylvania, Illinois, and Massachusetts, accounting for approximately 41 percent of the industry's 1982 employment. This represents a shift from 1977 when Pennsylvania, Ohio, Michigan, and Illinois accounted for approximately 50 percent of the industry's employment.

Compared with 1981, employment decreased 1 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 3567 shipped $968 million of products primary to the industry, $104 million of secondary products, and had $58 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 90 percent (specialization ratio). In 1977, this specialization ratio was 91 percent.

Establishments in this industry also accounted for 94 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 90 percent. The products primary to industry 3567, no matter in what industry they were produced, appear in table 6a and aggregate to $1,027 million in current prices.

The total cost of materials and services used by establishments classified in the industrial furnaces and ovens industry amounted to $472 million in current prices. Data on specific materials consumed appear in table 7.

Establishments of single-unit companies in this industry with up to 10 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 9 percent of total value of shipments.

## INDUSTRY 3568, POWER TRANSMISSION EQUIPMENT, N.E.C.

This industry comprises establishments primarily engaged in the manufacture of mechanical power transmission equipment and parts for industrial machinery. Establishments primarily engaged in the manufacture of automotive, tank, and tractor power transmission equipment are classified in industry 3714; aircraft power transmission equipment in industry 3728; ball and roller bearings in industry 3562; and speed changers, industrial high-speed drives, and gears in industry 3566.

In the 1982 Census of Manufactures, Industry 3568, Power Transmission Equipment, N.E.C., recorded employment of 27.1 thousand. The total value of shipments for establishments classified in this industry was $1,941 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 17 percent below the 32.5 thousand reported in 1977. The leading States in employment in 1982 were Illinois, Indiana, Pennsylvania, and

Wisconsin, accounting for approximately 45 percent of the industry's 1982 employment. This represents a shift from 1977 when Indiana, Illinois, Michigan, and Pennsylvania accounted for approximately 55 percent of the industry's employment.

Compared with 1981, employment decreased 12 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 3568 shipped $1,662 million of products primary to the industry, $192 million of secondary products, and had $87 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 90 percent (specialization ratio). In 1977, this specialization ratio was 82 percent.

Establishments in this industry also accounted for 84 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 74 percent. The products primary to industry 3568, no matter in what industry they were produced, appear in table 6a and aggregate to $1,986 million in current prices.

The total cost of materials and services used by establishments classified in the power transmission equipment, n.e.c., industry amounted to $767 million in current prices. Data on specific materials consumed appear in table 7.

Establishments of single-unit companies in this industry with up to 10 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 3 percent of total value of shipments.

## INDUSTRY 3569, GENERAL INDUSTRIAL MACHINERY, N.E.C.

This industry comprises establishments primarily engaged in the manufacture of machinery, equipment, and components for general industrial use, and for which no special classification is provided. Establishments primarily engaged in the production of machine and equipment parts, usually on a job or order basis, are classified in industry 3599.

In the 1982 Census of Manufactures, Industry 3569, General Industrial Machinery, N.E.C., recorded employment of 63.1 thousand. The total value of shipments for establishments classified in this industry was $4,567 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 10 percent above the 57.5 thousand reported in 1977. The leading States in employment in 1982 were California, New York, Ohio, and Illinois, accounting for approximately 33 percent of the industry's 1982 employment. This represents a shift from 1977 when California, New York, Illinois, and Pennsylvania accounted for approximately 35 percent of the industry's employment.

Compared with 1981, employment decreased less than 1 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 3569 shipped $3,813 million of products primary to the industry, $539 million of secondary products, and had $215 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 88 percent (specialization ratio). In 1977, this specialization ratio also was 88 percent.

Establishments in this industry also accounted for 86 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 86 percent. The products primary to industry 3569, no matter in what industry they were produced, appear in table 6a and aggregate to $4,411 million in current prices.

The total cost of materials and services used by establishments classified in the general industrial machinery, n.e.c., industry amounted to $1,893 million in current prices. Data on specific materials consumed appear in table 7.

Establishments of single-unit companies in this industry with up to 10 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 15 percent of total value of shipments.

# Table 1a. Historical Statistics for the Industry: 1982 and Earlier Years

[Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Year[1] | All establishments[3] | | All employees | | Production workers | | | Value added by manufacture[4] (million dollars) | Cost of materials (million dollars) | Value of shipments (million dollars) | New capital expenditures (million dollars) | End-of-year inventories[4] (million dollars) | Ratios | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Companies[2] (no.) | Total (no.) | With 20 employees or more (no.) | Number (1,000) | Payroll (million dollars) | Number (1,000) | Hours (millions) | Wages (million dollars) | | | | | Specialization (percent) | Coverage (percent) |
| **INDUSTRY 3561, PUMPS AND PUMPING EQUIPMENT** | | | | | | | | | | | | | | |
| 1982 Census | 518 | 626 | 325 | 68.5 | 1 484.7 | 39.1 | 74.7 | 772.0 | 3 336.8 | 2 742.4 | 6 198.3 | 227.5 | 1 861.0 | 90 | 90 |
| 1981 ASM | (NA) | (NA) | (NA) | 72.0 | 1 484.9 | 44.0 | 85.5 | 815.1 | 3 682.4 | 2 929.4 | 6 510.2 | 236.8 | 1 627.1 | (NA) | (NA) |
| 1980 ASM | (NA) | (NA) | (NA) | 74.1 | 1 343.2 | 46.5 | 90.4 | 751.3 | 3 288.1 | 242.9 | 2 429.5 | 195.0 | 1 453.6 | (NA) | (NA) |
| 1979 ASM | (NA) | (NA) | (NA) | 71.2 | 1 176.4 | 45.6 | 88.1 | 667.9 | 2 868.0 | 2 169.9 | 4 933.1 | 163.8 | 1 315.8 | (NA) | (NA) |
| 1978 ASM | (NA) | (NA) | (NA) | 66.9 | 1 041.3 | 42.5 | 83.3 | 589.6 | 2 514.1 | 1 849.6 | 4 277.2 | 167.2 | 1 176.3 | (NA) | (NA) |
| 1977 Census | 515 | 613 | 285 | 63.0 | 900.6 | 39.8 | 79.5 | 506.9 | 2 141.6 | 1 721.2 | 3 773.7 | 123.5 | 1 024.0 | 88 | 88 |
| 1976 ASM | (NA) | (NA) | (NA) | 62.8 | 832.5 | 39.0 | 78.1 | 461.5 | 1 858.9 | 1 567.7 | 3 422.5 | 120.5 | 975.9 | (NA) | (NA) |
| 1975 ASM | (NA) | (NA) | (NA) | 63.9 | 774.6 | 39.7 | 77.9 | 436.5 | 1 669.1 | 1 411.7 | 3 044.9 | 113.9 | 954.3 | (NA) | (NA) |
| 1974 ASM | (NA) | (NA) | (NA) | 61.9 | 689.4 | 40.8 | 80.6 | 403.6 | 1 501.5 | 1 221.9 | 2 562.6 | 115.2 | 872.2 | (NA) | (NA) |
| 1973 ASM | (NA) | (NA) | (NA) | 59.7 | 602.4 | 38.5 | 79.3 | 352.3 | 1 320.3 | 978.8 | 2 204.0 | 84.3 | 646.8 | (NA) | (NA) |
| 1972 Census[5] | 506 | 559 | 260 | 55.5 | 532.9 | 35.5 | 71.6 | 302.2 | 1 095.6 | 852.7 | 1 917.3 | 56.9 | 534.6 | 83 | 86 |
| **INDUSTRY 3562, BALL AND ROLLER BEARINGS** | | | | | | | | | | | | | | |
| 1982 Census | 107 | 161 | 115 | 43.7 | 907.0 | 33.5 | 62.6 | 645.9 | 1 839.2 | 1 215.8 | 3 135.8 | 164.5 | 886.6 | 96 | 99 |
| 1981 ASM | (NA) | (NA) | (NA) | 53.3 | 1 091.4 | 42.4 | 83.0 | 825.6 | 2 251.3 | 1 686.6 | 3 916.7 | 186.3 | 855.3 | (NA) | (NA) |
| 1980 ASM | (NA) | (NA) | (NA) | 52.6 | 988.7 | 42.3 | 83.1 | 757.9 | 2 022.8 | 1 493.6 | 3 449.0 | 245.1 | 814.4 | (NA) | (NA) |
| 1979 ASM | (NA) | (NA) | (NA) | 53.3 | 955.0 | 43.1 | 87.3 | 738.4 | 1 875.6 | 1 570.8 | 3 411.2 | 140.0 | 746.4 | (NA) | (NA) |
| 1978 ASM | (NA) | (NA) | (NA) | 52.7 | 858.8 | 43.2 | 86.9 | 665.3 | 1 663.0 | 1 330.4 | 2 946.3 | 122.0 | 687.6 | (NA) | (NA) |
| 1977 Census | 102 | 149 | 104 | 50.6 | 752.6 | 41.3 | 82.4 | 579.9 | 1 472.7 | 1 139.9 | 2 567.3 | 132.9 | 621.7 | 96 | 98 |
| 1976 ASM | (NA) | (NA) | (NA) | 49.2 | 687.1 | 39.9 | 79.6 | 524.3 | 1 327.5 | 968.6 | 2 282.2 | 87.4 | 562.9 | (NA) | (NA) |
| 1975 ASM | (NA) | (NA) | (NA) | 50.0 | 627.9 | 40.2 | 78.8 | 475.8 | 1 208.8 | 911.5 | 2 106.7 | 92.1 | 553.7 | (NA) | (NA) |
| 1974 ASM | (NA) | (NA) | (NA) | 55.3 | 658.4 | 45.0 | 92.5 | 509.5 | 1 296.0 | 893.2 | 2 099.8 | 109.8 | 563.1 | (NA) | (NA) |
| 1973 ASM | (NA) | (NA) | (NA) | 54.3 | 612.0 | 43.9 | 91.6 | 472.2 | 1 114.8 | 746.8 | 1 845.3 | 73.1 | 435.4 | (NA) | (NA) |
| 1972 Census | 99 | 135 | 93 | 50.9 | 525.5 | 41.4 | 83.4 | 403.7 | 931.3 | 610.4 | 1 530.5 | 51.3 | 398.5 | 94 | 99 |
| 1971 ASM | (NA) | (NA) | (NA) | 48.1 | 444.2 | 38.4 | 74.4 | 333.2 | 776.9 | 495.6 | 1 279.4 | 86.7 | 351.4 | (NA) | (NA) |
| 1970 ASM | (NA) | (NA) | (NA) | 56.0 | 482.0 | 45.1 | 87.6 | 360.5 | 808.2 | 520.3 | 1 316.3 | 54.9 | 361.5 | (NA) | (NA) |
| 1969 ASM | (NA) | (NA) | (NA) | 58.8 | 509.6 | 47.9 | 99.3 | 390.8 | 851.7 | 577.0 | 1 408.9 | 69.3 | 355.2 | (NA) | (NA) |
| 1968 ASM | (NA) | (NA) | (NA) | 58.8 | 461.2 | 47.3 | 96.0 | 347.6 | 844.9 | 511.4 | 1 341.3 | 75.3 | 335.2 | (NA) | (NA) |
| 1967 Census | 85 | 124 | 97 | 58.8 | 456.0 | 47.5 | 100.9 | 343.5 | 833.3 | 510.8 | 1 328.5 | 107.1 | 318.0 | 97 | 97 |
| **INDUSTRY 3563, AIR AND GAS COMPRESSORS** | | | | | | | | | | | | | | |
| 1982 Census | 239 | 282 | 144 | 32.1 | 709.3 | 17.5 | 34.1 | 344.0 | 1 470.6 | 1 698.3 | 3 270.0 | 118.1 | 990.0 | 90 | 91 |
| 1981 ASM | (NA) | (NA) | (NA) | 32.7 | 701.9 | 19.0 | 38.1 | 367.3 | 1 635.6 | 1 597.9 | 3 185.1 | 117.6 | 901.5 | (NA) | (NA) |
| 1980 ASM | (NA) | (NA) | (NA) | 34.1 | 664.6 | 20.3 | 41.0 | 354.8 | 1 616.1 | 1 499.9 | 3 050.6 | 89.5 | 863.7 | (NA) | (NA) |
| 1979 ASM | (NA) | (NA) | (NA) | 35.9 | 625.7 | 21.6 | 43.9 | 341.8 | 1 560.3 | 1 338.3 | 2 854.2 | 71.4 | 819.9 | (NA) | (NA) |
| 1978 ASM | (NA) | (NA) | (NA) | 32.9 | 536.2 | 19.8 | 39.9 | 299.6 | 1 347.5 | 1 087.4 | 2 341.7 | 81.2 | 724.3 | (NA) | (NA) |
| 1977 Census | 148 | 175 | 103 | 32.0 | 465.6 | 19.1 | 38.2 | 255.2 | 1 145.5 | 953.3 | 2 075.6 | 55.8 | 610.9 | 88 | 89 |
| 1976 ASM | (NA) | (NA) | (NA) | 26.8 | 358.1 | 16.3 | 31.9 | 195.7 | 878.8 | 865.0 | 1 736.9 | 46.4 | 551.4 | (NA) | (NA) |
| 1975 ASM | (NA) | (NA) | (NA) | 27.3 | 342.5 | 16.9 | 33.3 | 182.2 | 811.1 | 738.8 | 1 509.1 | 42.1 | 539.9 | (NA) | (NA) |
| 1974 ASM | (NA) | (NA) | (NA) | 30.5 | 355.4 | 19.0 | 37.5 | 195.0 | 786.0 | 697.2 | 1 376.5 | 33.9 | 533.0 | (NA) | (NA) |
| 1973 ASM | (NA) | (NA) | (NA) | 24.5 | 269.4 | 15.0 | 28.4 | 143.7 | 560.5 | 491.7 | 1 012.3 | 19.8 | 348.4 | (NA) | (NA) |
| 1972 Census[5] | 55 | 84 | 64 | 22.9 | 226.6 | 13.5 | 27.2 | 117.5 | 467.5 | 397.0 | 858.4 | 15.3 | 286.7 | 83 | 90 |
| **INDUSTRY 3564, BLOWERS AND FANS** | | | | | | | | | | | | | | |
| 1982 Census | 450 | 502 | 240 | 29.8 | 553.6 | 19.1 | 37.2 | 306.0 | 1 160.0 | 999.8 | 2 173.5 | 57.1 | 388.7 | 88 | 92 |
| 1981 ASM | (NA) | (NA) | (NA) | 30.1 | 517.6 | 19.7 | 39.0 | 296.5 | 1 069.5 | 966.7 | 2 033.4 | 40.1 | 314.9 | (NA) | (NA) |
| 1980 ASM | (NA) | (NA) | (NA) | 31.0 | 483.0 | 20.6 | 39.9 | 282.2 | 966.7 | 949.1 | 1 908.1 | 41.7 | 307.1 | (NA) | (NA) |
| 1979 ASM | (NA) | (NA) | (NA) | 31.1 | 450.4 | 21.0 | 41.7 | 264.0 | 914.6 | 836.8 | 1 737.5 | 36.9 | 294.4 | (NA) | (NA) |
| 1978 ASM | (NA) | (NA) | (NA) | 29.0 | 401.3 | 19.6 | 39.0 | 232.0 | 817.9 | 718.9 | 1 528.6 | 36.8 | 249.5 | (NA) | (NA) |
| 1977 Census | 432 | 482 | 198 | 28.0 | 356.8 | 18.6 | 36.7 | 209.6 | 776.7 | 662.8 | 1 430.8 | 37.5 | 242.9 | 89 | 87 |
| 1976 ASM | (NA) | (NA) | (NA) | 26.1 | 317.2 | 17.7 | 34.1 | 184.1 | 768.1 | 665.7 | 1 435.9 | 29.5 | 232.8 | (NA) | (NA) |
| 1975 ASM | (NA) | (NA) | (NA) | 27.1 | 309.7 | 17.8 | 32.6 | 175.2 | 664.5 | 625.6 | 1 306.0 | 41.8 | 242.4 | (NA) | (NA) |
| 1974 ASM | (NA) | (NA) | (NA) | 27.1 | 274.1 | 18.4 | 37.0 | 165.1 | 579.4 | 548.1 | 1 087.7 | 33.0 | 250.7 | (NA) | (NA) |
| 1973 ASM | (NA) | (NA) | (NA) | 26.7 | 262.8 | 18.0 | 37.1 | 153.6 | 570.3 | 455.8 | 1 006.3 | 25.7 | 172.5 | (NA) | (NA) |
| 1972 Census | 360 | 396 | 172 | 23.5 | 216.1 | 16.0 | 32.0 | 126.5 | 468.8 | 343.3 | 805.3 | 22.2 | 125.4 | 79 | 84 |
| 1971 ASM | (NA) | (NA) | (NA) | 22.3 | 191.2 | 14.9 | 30.3 | 109.0 | 392.1 | 300.5 | 697.9 | 15.9 | 114.0 | (NA) | (NA) |
| 1970 ASM | (NA) | (NA) | (NA) | 22.6 | 185.2 | 15.4 | 32.0 | 107.5 | 371.9 | 293.2 | 665.3 | 17.4 | 116.1 | (NA) | (NA) |
| 1969 ASM | (NA) | (NA) | (NA) | 24.1 | 188.6 | 16.8 | 34.8 | 114.8 | 368.1 | 285.6 | 640.4 | 15.1 | 115.1 | (NA) | (NA) |
| 1968 ASM | (NA) | (NA) | (NA) | 21.3 | 159.0 | 14.4 | 30.4 | 93.8 | 292.2 | 222.6 | 513.0 | 14.1 | 86.7 | (NA) | (NA) |
| 1967 Census | 271 | 287 | 129 | 21.0 | 149.2 | 14.9 | 31.5 | 93.2 | 302.2 | 222.6 | 525.2 | 14.5 | 84.7 | 85 | 82 |
| **INDUSTRY 3565, INDUSTRIAL PATTERNS** | | | | | | | | | | | | | | |
| 1982 Census | 994 | 996 | 105 | 9.8 | 217.6 | 8.1 | 14.8 | 173.4 | 347.6 | 97.6 | 452.3 | 15.8 | 29.6 | 97 | 76 |
| 1981 ASM | (NA) | (NA) | (NA) | 9.2 | 216.6 | 7.4 | 13.8 | 170.0 | [6]349.0 | 103.0 | 453.3 | 12.3 | [7]37.2 | (NA) | (NA) |
| 1980 ASM | (NA) | (NA) | (NA) | 9.6 | 183.1 | 7.6 | 13.5 | 145.3 | 310.7 | 113.8 | 415.2 | (S) | [7]35.8 | (NA) | (NA) |
| 1979 ASM | (NA) | (NA) | (NA) | 9.9 | 184.3 | 8.5 | 15.0 | 145.7 | 302.3 | 103.9 | 399.5 | 10.8 | [7]31.2 | (NA) | (NA) |
| 1978 ASM | (NA) | (NA) | (NA) | 9.4 | 167.0 | 8.0 | 15.5 | 130.1 | 268.6 | 73.8 | 335.6 | 17.1 | [7]30.1 | (NA) | (NA) |

See footnotes at end of table.

## Table 1a. Historical Statistics for the Industry: 1982 and Earlier Years—Con.

[Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Year[1] | Companies[2] (no.) | All establishments[3] Total (no.) | All establishments[3] With 20 employees or more (no.) | All employees Number (1,000) | All employees Payroll (million dollars) | Production workers Number (1,000) | Production workers Hours (millions) | Production workers Wages (million dollars) | Value added by manufacture[4] (million dollars) | Cost of materials (million dollars) | Value of shipments (million dollars) | New capital expenditures (million dollars) | End-of-year inventories[4] (million dollars) | Ratios Specialization (percent) | Ratios Coverage (percent) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **INDUSTRY 3565, INDUSTRIAL PATTERNS—Con.** | | | | | | | | | | | | | | | |
| 1977 Census | 1 001 | 1 002 | 115 | 9.3 | 152.7 | 8.0 | 15.8 | 122.2 | 252.5 | 72.0 | 320.6 | 11.1 | 25.2 | 97 | 75 |
| 1976 ASM | (NA) | (NA) | (NA) | 8.5 | 140.0 | 7.1 | 15.5 | 113.4 | 211.5 | 61.1 | 273.3 | 14.2 | 20.3 | (NA) | (NA) |
| 1975 ASM | (NA) | (NA) | (NA) | 8.9 | 138.7 | 7.2 | 15.8 | 112.4 | 219.8 | 63.6 | 287.9 | 12.2 | 19.4 | (NA) | (NA) |
| 1974 ASM | (NA) | (NA) | (NA) | 10.0 | 144.0 | 8.2 | 17.6 | 115.9 | 247.6 | 67.0 | 313.1 | 6.5 | 28.6 | (NA) | (NA) |
| 1973 ASM | (NA) | (NA) | (NA) | 9.2 | 117.1 | 7.9 | 15.1 | 96.7 | 185.1 | 41.4 | 224.1 | 5.0 | 15.0 | (NA) | (NA) |
| 1972 Census | 1 017 | 1 021 | 97 | 8.5 | 103.1 | 7.4 | 13.9 | 85.3 | 161.0 | 38.8 | 198.0 | 5.3 | 12.9 | 95 | 78 |
| 1971 ASM | (NA) | (NA) | (NA) | 8.5 | 87.9 | 7.2 | 14.0 | 71.5 | 153.3 | 41.8 | 197.6 | 6.9 | 11.4 | (NA) | (NA) |
| 1970 ASM | (NA) | (NA) | (NA) | 10.4 | 101.9 | 8.9 | 16.7 | 82.4 | 159.3 | 45.8 | 206.4 | 4.4 | 16.8 | (NA) | (NA) |
| 1969 ASM | (NA) | (NA) | (NA) | 10.5 | 112.2 | 9.3 | 16.9 | 94.2 | 167.3 | 40.0 | 206.0 | 6.6 | 17.0 | (NA) | (NA) |
| 1968 ASM | (NA) | (NA) | (NA) | 10.1 | 93.6 | 9.3 | 16.5 | 78.0 | 151.8 | 36.6 | 188.3 | 15.0 | 11.9 | (NA) | (NA) |
| 1967 Census | 1 156 | 1 163 | 141 | 10.9 | 106.0 | 9.5 | 19.4 | 86.7 | 165.5 | 37.0 | 201.8 | 8.1 | 12.7 | 96 | 80 |
| **INDUSTRY 3566, SPEED CHANGERS, DRIVES, AND GEARS** | | | | | | | | | | | | | | | |
| 1982 Census | 282 | 307 | 178 | 23.8 | 499.4 | 15.7 | 29.4 | 295.7 | 1 011.0 | 551.1 | 1 621.3 | 90.9 | 454.8 | 87 | 87 |
| 1981 ASM | (NA) | (NA) | (NA) | 25.7 | 529.7 | 17.6 | 35.3 | 328.0 | 1 158.3 | 673.7 | 1 788.7 | 95.1 | 444.3 | (NA) | (NA) |
| 1980 ASM | (NA) | (NA) | (NA) | 28.3 | 516.9 | 19.6 | 38.1 | 318.1 | 1 097.2 | 647.9 | 1 740.2 | 77.5 | 390.9 | (NA) | (NA) |
| 1979 ASM | (NA) | (NA) | (NA) | 27.7 | 474.8 | 19.4 | 39.1 | 300.7 | 1 070.9 | 602.7 | 1 603.8 | 82.9 | 385.7 | (NA) | (NA) |
| 1978 ASM | (NA) | (NA) | (NA) | 25.9 | 410.3 | 17.8 | 35.2 | 252.5 | 861.2 | 485.5 | 1 345.8 | 74.8 | 311.1 | (NA) | (NA) |
| 1977 Census | 307 | 327 | 162 | 25.3 | 365.4 | 17.6 | 35.0 | 226.7 | 803.1 | 429.7 | 1 222.3 | 48.5 | 297.8 | 87 | 84 |
| 1976 ASM | (NA) | (NA) | (NA) | 25.2 | 340.1 | 17.8 | 35.9 | 218.9 | 765.7 | 426.0 | 1 203.0 | 58.7 | 286.8 | (NA) | (NA) |
| 1975 ASM | (NA) | (NA) | (NA) | 26.9 | 331.8 | 19.2 | 38.8 | 215.7 | 713.8 | 438.1 | 1 141.7 | 41.8 | 290.1 | (NA) | (NA) |
| 1974 ASM | (NA) | (NA) | (NA) | 27.0 | 305.7 | 19.3 | 40.0 | 199.4 | 644.1 | 371.9 | 961.5 | 40.5 | 258.4 | (NA) | (NA) |
| 1973 ASM | (NA) | (NA) | (NA) | 25.4 | 272.9 | 17.7 | 36.4 | 174.0 | 525.2 | 304.4 | 797.1 | 28.0 | 184.7 | (NA) | (NA) |
| 1972 Census[5] | 330 | 346 | 155 | 22.5 | 224.2 | 15.6 | 30.6 | 137.5 | 409.0 | 231.3 | 632.7 | 21.8 | 147.6 | 88 | 89 |
| **INDUSTRY 3567, INDUSTRIAL FURNACES AND OVENS** | | | | | | | | | | | | | | | |
| 1982 Census | 322 | 354 | 173 | 16.5 | 323.3 | 9.4 | 18.3 | 154.1 | 646.2 | 471.6 | 1 130.6 | 21.9 | 209.9 | 90 | 94 |
| 1981 ASM | (NA) | (NA) | (NA) | 16.7 | 300.2 | 10.1 | 19.1 | 152.4 | 643.2 | 496.3 | 1 115.9 | 22.1 | 203.2 | (NA) | (NA) |
| 1980 ASM | (NA) | (NA) | (NA) | 17.9 | 287.9 | 11.2 | 21.1 | 147.6 | 599.6 | 489.3 | 1 108.2 | 17.6 | 180.2 | (NA) | (NA) |
| 1979 ASM | (NA) | (NA) | (NA) | 17.6 | 263.1 | 11.3 | 21.4 | 140.0 | 563.4 | 444.3 | 1 004.2 | 21.1 | 188.6 | (NA) | (NA) |
| 1978 ASM | (NA) | (NA) | (NA) | 15.1 | 224.9 | 9.0 | 17.2 | 113.0 | 464.4 | 342.0 | 810.5 | 20.7 | 157.8 | (NA) | (NA) |
| 1977 Census | 311 | 327 | 137 | 15.2 | 209.4 | 9.3 | 17.9 | 107.4 | 469.3 | 305.4 | 746.3 | 13.4 | 151.4 | 91 | 90 |
| 1976 ASM | (NA) | (NA) | (NA) | 13.3 | 183.5 | 7.6 | 14.7 | 91.2 | 373.0 | 291.8 | 669.5 | 11.8 | 122.4 | (NA) | (NA) |
| 1975 ASM | (NA) | (NA) | (NA) | 13.8 | 179.3 | 8.1 | 15.9 | 93.0 | 363.0 | 302.7 | 664.6 | 14.8 | 138.6 | (NA) | (NA) |
| 1974 ASM | (NA) | (NA) | (NA) | 15.8 | 189.5 | 10.1 | 20.8 | 102.6 | 382.0 | 293.7 | 645.7 | 13.3 | 153.6 | (NA) | (NA) |
| 1973 ASM | (NA) | (NA) | (NA) | 13.7 | 149.5 | 8.7 | 17.6 | 81.2 | 294.7 | 226.7 | 498.9 | 7.1 | 93.1 | (NA) | (NA) |
| 1972 Census | 253 | 266 | 108 | 13.6 | 138.5 | 8.1 | 16.0 | 69.8 | 244.3 | 200.3 | 443.2 | 7.5 | 75.7 | 78 | 91 |
| 1971 ASM | (NA) | (NA) | (NA) | 13.2 | 128.4 | 7.0 | 14.0 | 56.8 | 217.2 | 220.9 | 438.4 | 6.0 | 72.0 | (NA) | (NA) |
| 1970 ASM | (NA) | (NA) | (NA) | 14.9 | 138.6 | 7.9 | 15.9 | 62.8 | 253.7 | 216.0 | 467.7 | 9.2 | 70.5 | (NA) | (NA) |
| 1969 ASM | (NA) | (NA) | (NA) | 15.7 | 138.5 | 8.8 | 17.9 | 64.8 | 264.4 | 212.4 | 472.4 | 5.9 | 73.4 | (NA) | (NA) |
| 1968 ASM | (NA) | (NA) | (NA) | 13.6 | 114.1 | 7.3 | 14.8 | 49.2 | 215.8 | 197.1 | 414.4 | 6.0 | 54.0 | (NA) | (NA) |
| 1967 Census | 246 | 255 | 117 | 16.1 | 129.3 | 8.9 | 18.3 | 58.2 | 259.4 | 236.1 | 495.7 | 11.6 | 66.5 | 87 | 88 |
| **INDUSTRY 3568, POWER TRANSMISSION EQUIPMENT, N.E.C.** | | | | | | | | | | | | | | | |
| 1982 Census | 243 | 294 | 195 | 27.1 | 556.4 | 18.1 | 33.3 | 337.2 | 1 153.9 | 767.4 | 1 940.5 | 75.0 | 512.8 | 90 | 84 |
| 1981 ASM | (NA) | (NA) | (NA) | 30.9 | 643.7 | 21.9 | 41.9 | 409.6 | 1 322.7 | 908.5 | 2 227.6 | 65.5 | 500.3 | (NA) | (NA) |
| 1980 ASM | (NA) | (NA) | (NA) | 33.7 | 616.0 | 23.7 | 45.7 | 393.3 | 1 284.7 | 883.2 | 2 156.0 | 96.5 | 516.0 | (NA) | (NA) |
| 1979 ASM | (NA) | (NA) | (NA) | 35.6 | 614.2 | 26.2 | 51.8 | 414.5 | 1 308.1 | 863.6 | 2 139.1 | 56.4 | 504.8 | (NA) | (NA) |
| 1978 ASM | (NA) | (NA) | (NA) | 34.0 | 536.1 | 24.9 | 49.1 | 361.9 | 1 154.5 | 721.5 | 1 839.0 | 54.6 | 462.7 | (NA) | (NA) |
| 1977 Census | 184 | 226 | 163 | 32.5 | 464.8 | 23.8 | 45.8 | 306.8 | 1 009.1 | 650.2 | 1 626.0 | 50.3 | 418.8 | 82 | 74 |
| 1976 ASM | (NA) | (NA) | (NA) | 29.0 | 372.1 | 20.8 | 40.1 | 243.0 | 815.2 | 516.3 | 1 322.3 | 35.4 | 339.0 | (NA) | (NA) |
| 1975 ASM | (NA) | (NA) | (NA) | 33.0 | 396.4 | 23.7 | 46.1 | 260.4 | 849.7 | 551.6 | 1 401.9 | 47.3 | 336.7 | (NA) | (NA) |
| 1974 ASM | (NA) | (NA) | (NA) | 32.0 | 365.8 | 24.1 | 49.3 | 254.6 | 783.0 | 520.6 | 1 260.5 | 40.5 | 316.0 | (NA) | (NA) |
| 1973 ASM | (NA) | (NA) | (NA) | 32.4 | 346.2 | 24.0 | 49.9 | 240.5 | 693.3 | 443.5 | 1 102.4 | 38.4 | 277.2 | (NA) | (NA) |
| 1972 Census[5] | 125 | 155 | 127 | 27.7 | 266.5 | 20.7 | 42.0 | 183.0 | 544.4 | 340.3 | 876.4 | 20.4 | 208.0 | 87 | 74 |
| **INDUSTRY 3569, GENERAL INDUSTRIAL MACHINERY, N.E.C.** | | | | | | | | | | | | | | | |
| 1982 Census | 1 391 | 1 460 | 565 | 63.1 | 1 256.0 | 37.4 | 73.7 | 621.4 | 2 623.9 | 1 893.0 | 4 566.5 | 132.3 | 1 077.1 | 88 | 86 |
| 1981 ASM | (NA) | (NA) | (NA) | 63.2 | 1 220.8 | 38.9 | 77.2 | 633.2 | 2 531.1 | 1 956.9 | 4 460.2 | 162.1 | 976.3 | (NA) | (NA) |
| 1980 ASM | (NA) | (NA) | (NA) | 63.6 | 1 099.8 | 39.5 | 76.9 | 593.1 | 2 293.5 | 1 777.2 | 4 003.0 | 132.8 | 898.5 | (NA) | (NA) |
| 1979 ASM | (NA) | (NA) | (NA) | 64.3 | 1 001.1 | 39.4 | 78.9 | 530.6 | 2 080.3 | 1 609.3 | 3 607.4 | 97.9 | 803.1 | (NA) | (NA) |
| 1978 ASM | (NA) | (NA) | (NA) | 60.2 | 876.3 | 37.6 | 72.8 | 451.4 | 1 892.1 | 1 322.6 | 3 131.6 | 91.7 | 703.6 | (NA) | (NA) |
| 1977 Census | 1 586 | 1 646 | 539 | 57.5 | 783.2 | 34.9 | 69.2 | 397.7 | 1 602.2 | 1 194.8 | 2 779.5 | 82.6 | 621.2 | 88 | 86 |
| 1976 ASM | (NA) | (NA) | (NA) | 39.0 | 504.8 | 24.0 | 48.3 | 267.0 | 1 044.4 | 821.8 | 1 850.7 | 57.9 | 432.1 | (NA) | (NA) |
| 1975 ASM | (NA) | (NA) | (NA) | 39.2 | 464.4 | 24.4 | 49.9 | 250.7 | 928.1 | 716.0 | 1 655.5 | 51.6 | 413.5 | (NA) | (NA) |
| 1974 ASM | (NA) | (NA) | (NA) | 41.6 | 452.3 | 26.6 | 55.8 | 256.2 | 927.5 | 686.2 | 1 549.5 | 55.8 | 415.6 | (NA) | (NA) |
| 1973 ASM | (NA) | (NA) | (NA) | 39.2 | 385.7 | 25.4 | 51.0 | 216.8 | 772.7 | 570.7 | 1 290.7 | 39.0 | 308.2 | (NA) | (NA) |
| 1972 Census | 864 | 901 | 360 | 37.0 | 351.8 | 24.0 | 48.2 | 196.5 | 697.7 | 483.7 | 1 171.9 | 31.3 | 254.3 | 85 | 81 |
| 1971 ASM | (NA) | (NA) | (NA) | 34.3 | 303.7 | 21.9 | 43.9 | 164.8 | 579.5 | 376.1 | 952.6 | 27.0 | 214.8 | (NA) | (NA) |
| 1970 ASM | (NA) | (NA) | (NA) | 39.9 | 328.6 | 24.3 | 51.1 | 174.3 | 637.8 | 396.0 | 1 017.5 | 31.9 | 229.4 | (NA) | (NA) |
| 1969 ASM | (NA) | (NA) | (NA) | 37.3 | 299.9 | 23.5 | 48.4 | 168.6 | 591.1 | 378.8 | 962.0 | 29.4 | 213.7 | (NA) | (NA) |
| 1968 ASM | (NA) | (NA) | (NA) | 36.2 | 278.6 | 22.6 | 47.0 | 154.4 | 506.2 | 364.2 | 870.2 | 31.4 | 186.7 | (NA) | (NA) |
| 1967 Census | 725 | 758 | 346 | 39.4 | 295.4 | 25.4 | 52.3 | 163.2 | 535.9 | 379.8 | 901.2 | 30.5 | 194.8 | 85 | 79 |

See footnotes at end of table.

## Table 1a. Historical Statistics for the Industry: 1982 and Earlier Years—Con.

[1]In annual survey of manufactures (ASM) years, data are estimates based on a representative sample of establishments canvassed annually and may differ from results of a complete canvass of all establishments. ASM publication shows percentage standard errors. Unless otherwise noted, for data prior to 1967, see 1967 Census of Manufactures, vol. II, table 1 of the Industry chapter.

[2]For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

[3]Includes establishments with payroll at any time during year.

[4]Effective with the 1982 Economic Censuses, uniform instructions for reporting inventories were introduced for all sector reports. Up to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). In 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Because of this change in reporting instructions, the 1982 data for inventories and value added by manufacture included in the tables of this report are not comparable to the prior-year data shown above and in historical census of manufactures and annual survey of manufactures publications. Inventories and value added data estimated on a basis comparable to the historical data, using the reported information for 1982, are shown below:

| Industries | End-of-1981 inventories (million dollars) | End-of-1982 inventories (million dollars) | 1982 value added by manufacture (million dollars) |
|---|---|---|---|
| Industry 3561, Pumps and pumping equipment | 1 805.0 | 1 649.4 | 3 332.8 |
| Industry 3562, Ball and roller bearings | 828.8 | 703.3 | 1 843.2 |
| Industry 3563, Air and gas compressors | 928.1 | 816.3 | 1 474.4 |
| Industry 3564, Blowers and fans | 367.0 | 344.0 | 1 159.3 |
| Industry 3565, Industrial patterns | 35.0 | 29.5 | 349.9 |
| Industry 3566, Speed changers, drives, and gears | 486.1 | 382.7 | 1 020.1 |
| Industry 3567, Industrial furnaces and ovens | 213.9 | 199.2 | 647.7 |
| Industry 3568, Power transmission equipment, n.e.c. | 457.4 | 975.5 | 2 625.6 |
| Industry 3569, General industrial machinery, n.e.c. | 1 049.2 | 975.5 | 2 625.6 |

See Inventories in appendixes for explanation of the difference between end-of-1981 inventory figure shown in table and corresponding figure shown in footnote.

[5]Industry was defined or redefined for 1972 Census of Manufactures, so data are available only for years shown.

[6]Data either have associated standard errors exceeding 15 percent or are not consistent with other census series and related data; thus, these estimates may be of limited reliability.

[7]Estimate for new capital expenditures has associated standard error of 15 percent or more and may be of limited reliability. Estimates for other data items are of acceptable reliability.

## Table 1b. Selected Operating Ratios for the Industry: 1982 and Earlier Years

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Year | Payroll per employee (dollars) | Production workers as percent of total employment (percent) | Annual hours of production workers (number) | Average hourly earnings of production workers (dollars) | Cost of materials as percent of value of shipments (percent) | Cost of materials and payroll as percent of value of shipments (percent) | Value added per employee (dollars) | Payroll as percent of value added (percent) | Value added per production worker hour (dollars) |
|---|---|---|---|---|---|---|---|---|---|
| **INDUSTRY 3561, PUMPS AND PUMPING EQUIPMENT** | | | | | | | | | |
| 1982 Census | 21 674 | 57 | 1 910 | 10.33 | 44 | 68 | 48 712 | 44 | 44.67 |
| 1981 ASM | 20 624 | 61 | 1 943 | 9.53 | 45 | 68 | 51 144 | 40 | 43.06 |
| 1980 ASM | 18 127 | 63 | 1 944 | 8.31 | 10 | 65 | 44 374 | 41 | 36.37 |
| 1979 ASM | 16 522 | 64 | 1 932 | 7.58 | 44 | 68 | 40 281 | 41 | 32.55 |
| 1978 ASM | 15 565 | 64 | 1 960 | 7.08 | 43 | 68 | 37 580 | 41 | 30.18 |
| 1977 Census | 14 295 | 63 | 1 997 | 6.38 | 46 | 69 | 33 994 | 42 | 26.94 |
| 1976 ASM | 13 256 | 62 | 2 003 | 5.91 | 46 | 70 | 29 600 | 45 | 23.80 |
| 1975 ASM | 12 122 | 62 | 1 962 | 5.60 | 46 | 72 | 26 121 | 46 | 21.43 |
| 1974 ASM | 11 137 | 66 | 1 975 | 5.01 | 48 | 75 | 24 257 | 46 | 18.63 |
| 1973 ASM | 10 090 | 64 | 2 060 | 4.44 | 44 | 72 | 22 116 | 46 | 16.65 |
| 1972 Census | 9 602 | 64 | 2 017 | 4.22 | 44 | 72 | 19 741 | 49 | 15.30 |
| **INDUSTRY 3562, BALL AND ROLLER BEARINGS** | | | | | | | | | |
| 1982 Census | 20 755 | 77 | 1 869 | 10.32 | 39 | 68 | 42 087 | 49 | 29.38 |
| 1981 ASM | 20 477 | 80 | 1 958 | 9.95 | 43 | 71 | 42 238 | 48 | 27.12 |
| 1980 ASM | 18 797 | 80 | 1 965 | 9.12 | 43 | 72 | 38 456 | 49 | 24.34 |
| 1979 ASM | 17 917 | 81 | 2 026 | 8.46 | 46 | 74 | 35 189 | 51 | 21.48 |
| 1978 ASM | 16 296 | 82 | 2 012 | 7.66 | 45 | 74 | 31 556 | 52 | 19.14 |
| 1977 Census | 14 874 | 82 | 1 995 | 7.04 | 44 | 74 | 29 105 | 51 | 17.87 |
| 1976 ASM | 13 965 | 81 | 1 995 | 6.59 | 42 | 73 | 26 982 | 52 | 16.68 |
| 1975 ASM | 12 558 | 80 | 1 960 | 6.04 | 43 | 73 | 24 176 | 52 | 15.34 |
| 1974 ASM | 11 906 | 81 | 2 056 | 5.51 | 43 | 74 | 23 436 | 51 | 14.01 |
| 1973 ASM | 11 271 | 81 | 2 087 | 5.16 | 40 | 74 | 20 530 | 55 | 12.17 |
| 1972 Census | 10 324 | 81 | 2 014 | 4.84 | 40 | 74 | 18 297 | 56 | 11.17 |
| 1971 ASM | 9 235 | 80 | 1 938 | 4.48 | 39 | 73 | 16 152 | 57 | 10.44 |
| 1970 ASM | 8 607 | 81 | 1 942 | 4.12 | 40 | 76 | 14 432 | 60 | 9.23 |
| 1969 ASM | 8 667 | 81 | 2 073 | 3.94 | 41 | 77 | 14 485 | 60 | 8.58 |
| 1968 ASM | 7 844 | 80 | 2 030 | 3.62 | 38 | 73 | 14 369 | 55 | 8.80 |
| 1967 Census | 7 755 | 81 | 2 124 | 3.40 | 38 | 73 | 14 172 | 55 | 8.26 |
| **INDUSTRY 3563, AIR AND GAS COMPRESSORS** | | | | | | | | | |
| 1982 Census | 22 097 | 55 | 1 949 | 10.09 | 52 | 74 | 45 813 | 48 | 43.13 |
| 1981 ASM | 21 465 | 58 | 2 005 | 9.64 | 50 | 72 | 50 018 | 43 | 42.93 |
| 1980 ASM | 19 490 | 60 | 2 020 | 8.65 | 49 | 71 | 47 393 | 41 | 39.42 |
| 1979 ASM | 17 429 | 60 | 2 032 | 7.79 | 47 | 69 | 43 462 | 40 | 35.54 |
| 1978 ASM | 16 298 | 60 | 2 015 | 7.51 | 46 | 69 | 40 957 | 40 | 33.77 |
| 1977 Census | 14 550 | 60 | 2 000 | 6.68 | 46 | 68 | 35 797 | 41 | 29.99 |
| 1976 ASM | 13 362 | 61 | 1 957 | 6.13 | 50 | 70 | 32 791 | 41 | 27.55 |
| 1975 ASM | 12 546 | 62 | 1 970 | 5.47 | 49 | 72 | 29 711 | 42 | 24.36 |
| 1974 ASM | 11 652 | 62 | 1 974 | 5.20 | 51 | 76 | 25 770 | 45 | 20.96 |
| 1973 ASM | 10 996 | 61 | 1 893 | 5.06 | 49 | 75 | 22 878 | 48 | 19.74 |
| 1972 Census | 9 895 | 59 | 2 015 | 4.32 | 46 | 73 | 20 415 | 48 | 17.19 |

See footnotes at end of table.

## Table 1b. Selected Operating Ratios for the Industry: 1982 and Earlier Years—Con.

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Year | Payroll per employee (dollars) | Production workers as percent of total employment (percent) | Annual hours of production workers (number) | Average hourly earnings of production workers (dollars) | Cost of materials as percent of value of shipments (percent) | Cost of materials and payroll as percent of value of shipments (percent) | Value added per employee (dollars) | Payroll as percent of value added (percent) | Value added per production worker hour (dollars) |
|---|---|---|---|---|---|---|---|---|---|
| | **INDUSTRY 3564, BLOWERS AND FANS** | | | | | | | | |
| 1982 Census | 18 577 | 64 | 1 948 | 8.23 | 46 | 71 | 38 926 | 48 | 31.18 |
| 1981 ASM | 17 196 | 65 | 1 980 | 7.60 | 48 | 73 | 35 532 | 48 | 27.42 |
| 1980 ASM | 15 581 | 66 | 1 937 | 7.07 | 50 | 75 | 31 184 | 50 | 24.23 |
| 1979 ASM | 14 482 | 68 | 1 986 | 6.33 | 48 | 74 | 29 408 | 49 | 21.93 |
| 1978 ASM | 13 838 | 68 | 1 990 | 5.95 | 47 | 73 | 28 203 | 49 | 20.97 |
| 1977 Census | 12 743 | 66 | 1 973 | 5.71 | 46 | 71 | 27 739 | 46 | 21.16 |
| 1976 ASM | 12 153 | 68 | 1 927 | 5.40 | 46 | 68 | 29 429 | 41 | 22.52 |
| 1975 ASM | 11 428 | 66 | 1 831 | 5.37 | 48 | 72 | 24 520 | 47 | 20.38 |
| 1974 ASM | 10 114 | 68 | 2 011 | 4.46 | 50 | 76 | 21 380 | 47 | 15.66 |
| 1973 ASM | 9 843 | 67 | 2 061 | 4.14 | 45 | 71 | 21 360 | 46 | 15.37 |
| 1972 Census | 9 196 | 68 | 2 000 | 3.95 | 43 | 69 | 19 949 | 46 | 14.65 |
| 1971 ASM | 8 574 | 67 | 2 034 | 3.60 | 43 | 70 | 17 583 | 49 | 12.94 |
| 1970 ASM | 8 195 | 68 | 2 078 | 3.36 | 44 | 72 | 16 456 | 50 | 11.62 |
| 1969 ASM | 7 826 | 70 | 2 071 | 3.30 | 45 | 74 | 15 274 | 51 | 10.58 |
| 1968 ASM | 7 465 | 68 | 2 111 | 3.09 | 43 | 74 | 13 718 | 54 | 9.61 |
| 1967 Census | 7 105 | 71 | 2 114 | 2.96 | 42 | 71 | 14 390 | 49 | 9.59 |
| | **INDUSTRY 3565, INDUSTRIAL PATTERNS** | | | | | | | | |
| 1982 Census | 22 204 | 83 | 1 827 | 11.72 | 22 | 70 | 35 469 | 63 | 23.49 |
| 1981 ASM | 23 543 | 80 | 1 865 | 12.32 | 23 | 71 | 37 935 | 62 | 25.29 |
| 1980 ASM | 19 073 | 79 | 1 776 | 10.76 | 27 | 72 | 32 365 | 59 | 23.01 |
| 1979 ASM | 18 616 | 86 | 1 765 | 9.71 | 26 | 72 | 30 535 | 61 | 20.15 |
| 1978 ASM | 17 766 | 85 | 1 938 | 8.39 | 22 | 72 | 28 574 | 62 | 17.33 |
| 1977 Census | 16 419 | 86 | 1 975 | 7.73 | 22 | 70 | 27 151 | 60 | 15.98 |
| 1976 ASM | 16 471 | 84 | 2 183 | 7.32 | 22 | 74 | 24 882 | 66 | 13.65 |
| 1975 ASM | 15 584 | 81 | 2 194 | 7.11 | 22 | 70 | 24 697 | 63 | 13.91 |
| 1974 ASM | 14 400 | 82 | 2 146 | 6.59 | 21 | 67 | 24 760 | 58 | 14.07 |
| 1973 ASM | 12 728 | 86 | 1 911 | 6.40 | 18 | 71 | 20 120 | 63 | 12.26 |
| 1972 Census | 12 129 | 87 | 1 878 | 6.14 | 20 | 72 | 18 941 | 64 | 11.58 |
| 1971 ASM | 10 341 | 85 | 1 944 | 5.11 | 21 | 66 | 18 035 | 57 | 10.95 |
| 1970 ASM | 9 798 | 86 | 1 876 | 4.93 | 22 | 72 | 15 317 | 64 | 9.54 |
| 1969 ASM | 10 686 | 89 | 1 817 | 5.57 | 19 | 74 | 15 933 | 67 | 9.90 |
| 1968 ASM | 9 267 | 92 | 1 774 | 4.73 | 19 | 69 | 15 030 | 62 | 9.20 |
| 1967 Census | 9 725 | 87 | 2 042 | 4.47 | 18 | 71 | 15 183 | 64 | 8.53 |
| | **INDUSTRY 3566, SPEED CHANGERS, DRIVES, AND GEARS** | | | | | | | | |
| 1982 Census | 20 983 | 66 | 1 873 | 10.06 | 34 | 65 | 42 479 | 49 | 34.39 |
| 1981 ASM | 20 611 | 68 | 2 006 | 9.29 | 38 | 67 | 45 070 | 46 | 32.81 |
| 1980 ASM | 18 265 | 69 | 1 944 | 8.35 | 37 | 67 | 38 770 | 47 | 28.80 |
| 1979 ASM | 17 141 | 70 | 2 015 | 7.69 | 38 | 67 | 38 661 | 44 | 27.39 |
| 1978 ASM | 15 842 | 69 | 1 978 | 7.17 | 36 | 67 | 33 251 | 48 | 24.47 |
| 1977 Census | 14 443 | 70 | 1 989 | 6.48 | 35 | 65 | 31 743 | 45 | 22.95 |
| 1976 ASM | 13 496 | 71 | 2 017 | 6.10 | 35 | 64 | 30 385 | 44 | 21.33 |
| 1975 ASM | 12 335 | 71 | 2 021 | 5.56 | 38 | 67 | 26 535 | 46 | 18.40 |
| 1974 ASM | 11 322 | 71 | 2 073 | 4.98 | 39 | 70 | 23 856 | 47 | 16.10 |
| 1973 ASM | 10 744 | 70 | 2 056 | 4.78 | 38 | 72 | 20 677 | 52 | 14.43 |
| 1972 Census | 9 964 | 69 | 1 962 | 4.49 | 37 | 72 | 18 178 | 55 | 13.37 |
| | **INDUSTRY 3567, INDUSTRIAL FURNACES AND OVENS** | | | | | | | | |
| 1982 Census | 19 594 | 57 | 1 947 | 8.42 | 42 | 70 | 39 164 | 50 | 35.31 |
| 1981 ASM | 17 976 | 60 | 1 891 | 7.98 | 44 | 71 | 38 515 | 47 | 33.68 |
| 1980 ASM | 16 084 | 63 | 1 884 | 7.00 | 44 | 70 | 33 497 | 48 | 28.42 |
| 1979 ASM | 14 949 | 64 | 1 894 | 6.54 | 44 | 70 | 32 011 | 47 | 26.33 |
| 1978 ASM | 14 894 | 60 | 1 911 | 6.57 | 42 | 70 | 30 755 | 48 | 27.00 |
| 1977 Census | 13 776 | 61 | 1 925 | 6.00 | 41 | 69 | 30 875 | 45 | 26.22 |
| 1976 ASM | 13 797 | 57 | 1 934 | 6.20 | 44 | 71 | 28 045 | 49 | 25.37 |
| 1975 ASM | 12 993 | 59 | 1 963 | 5.85 | 46 | 73 | 26 304 | 49 | 22.83 |
| 1974 ASM | 11 994 | 64 | 2 059 | 4.93 | 45 | 75 | 24 177 | 50 | 18.37 |
| 1973 ASM | 10 912 | 64 | 2 023 | 4.61 | 45 | 75 | 21 511 | 51 | 16.74 |
| 1972 Census | 10 184 | 60 | 1 975 | 4.36 | 45 | 76 | 17 963 | 57 | 15.27 |
| 1971 ASM | 9 727 | 53 | 2 000 | 4.06 | 50 | 80 | 16 455 | 59 | 15.51 |
| 1970 ASM | 9 302 | 53 | 2 013 | 3.95 | 46 | 76 | 17 027 | 55 | 15.96 |
| 1969 ASM | 8 822 | 56 | 2 034 | 3.62 | 45 | 74 | 16 841 | 52 | 14.77 |
| 1968 ASM | 8 390 | 54 | 2 027 | 3.32 | 48 | 75 | 15 868 | 53 | 14.58 |
| 1967 Census | 8 031 | 55 | 2 056 | 3.18 | 48 | 74 | 16 112 | 50 | 14.17 |
| | **INDUSTRY 3568, POWER TRANSMISSION EQUIPMENT, N.E.C.** | | | | | | | | |
| 1982 Census | 20 531 | 67 | 1 840 | 10.13 | 40 | 68 | 42 579 | 48 | 34.65 |
| 1981 ASM | 20 832 | 71 | 1 913 | 9.78 | 41 | 70 | 42 809 | 49 | 31.57 |
| 1980 ASM | 18 279 | 70 | 1 928 | 8.61 | 41 | 70 | 38 122 | 48 | 28.11 |
| 1979 ASM | 17 253 | 74 | 1 977 | 8.00 | 40 | 69 | 36 744 | 47 | 25.25 |
| 1978 ASM | 15 768 | 73 | 1 972 | 7.37 | 39 | 68 | 33 956 | 46 | 23.51 |
| 1977 Census | 14 302 | 73 | 1 924 | 6.70 | 40 | 69 | 31 049 | 46 | 22.03 |
| 1976 ASM | 12 831 | 72 | 1 928 | 6.06 | 39 | 67 | 28 110 | 46 | 20.33 |
| 1975 ASM | 12 012 | 72 | 1 945 | 5.65 | 39 | 68 | 25 748 | 47 | 18.43 |
| 1974 ASM | 11 431 | 75 | 2 046 | 5.16 | 41 | 70 | 24 469 | 47 | 15.88 |
| 1973 ASM | 10 685 | 74 | 2 079 | 4.82 | 40 | 72 | 21 398 | 50 | 13.89 |
| 1972 Census | 9 821 | 75 | 2 029 | 4.36 | 39 | 69 | 19 653 | 49 | 12.96 |

See footnotes at end of table.

## Table 1b. Selected Operating Ratios for the Industry: 1982 and Earlier Years—Con.

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Year | Payroll per employee (dollars) | Production workers as percent of total employment (percent) | Annual hours of production workers (number) | Average hourly earnings of production workers (dollars) | Cost of materials as percent of value of shipments (percent) | Cost of materials and payroll as percent of value of shipments (percent) | Value added per employee (dollars) | Payroll as percent of value added (percent) | Value added per production worker hour (dollars) |
|---|---|---|---|---|---|---|---|---|---|
| | INDUSTRY 3569, GENERAL INDUSTRIAL MACHINERY, N.E.C. | | | | | | | | |
| 1982 Census | 19 905 | 59 | 1 971 | 8.43 | 41 | 69 | 41 583 | 48 | 35.60 |
| 1981 ASM | 19 316 | 62 | 1 985 | 8.20 | 44 | 71 | 40 049 | 48 | 32.79 |
| 1980 ASM | 17 292 | 62 | 1 947 | 7.71 | 44 | 72 | 36 061 | 48 | 29.82 |
| 1979 ASM | 15 569 | 61 | 2 003 | 6.72 | 45 | 72 | 32 353 | 48 | 26.37 |
| 1978 ASM | 14 556 | 62 | 1 936 | 6.20 | 42 | 70 | 31 430 | 46 | 25.99 |
| 1977 Census | 13 621 | 61 | 1 983 | 5.75 | 43 | 71 | 27 864 | 49 | 23.15 |
| 1976 ASM | 12 944 | 62 | 2 012 | 5.53 | 44 | 72 | 26 779 | 48 | 21.62 |
| 1975 ASM | 11 847 | 62 | 2 045 | 5.02 | 43 | 71 | 23 676 | 50 | 18.60 |
| 1974 ASM | 10 873 | 64 | 2 098 | 4.59 | 44 | 73 | 22 296 | 49 | 16.62 |
| 1973 ASM | 9 839 | 65 | 2 008 | 4.25 | 44 | 74 | 19 712 | 50 | 15.15 |
| 1972 Census | 9 508 | 65 | 2 008 | 4.08 | 41 | 71 | 18 857 | 50 | 14.48 |
| 1971 ASM | 8 854 | 64 | 2 005 | 3.75 | 39 | 71 | 16 895 | 52 | 13.20 |
| 1970 ASM | 8 236 | 61 | 2 103 | 3.41 | 39 | 71 | 15 985 | 52 | 12.48 |
| 1969 ASM | 8 040 | 63 | 2 060 | 3.48 | 39 | 71 | 15 847 | 51 | 12.21 |
| 1968 ASM | 7 696 | 62 | 2 080 | 3.29 | 42 | 74 | 13 983 | 55 | 10.77 |
| 1967 Census | 7 497 | 64 | 2 059 | 3.12 | 42 | 75 | 13 602 | 55 | 10.25 |

Note: For qualifications of data, see footnotes on table 1a.

## Table 2. Industry Statistics for Selected States: 1982 and 1977

[Excludes data for auxiliaries. Includes data for States with 150 employees or more. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Industry and geographic area | 1982 | | | | | | | | | | | 1977 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | All establishments[2] | | All employees | | Production workers | | | | | | | |
| | E[1] | Total (no.) | With 20 employees or more (no.) | Number[3] (1,000) | Payroll (million dollars) | Number (1,000) | Hours (millions) | Wages (million dollars) | Value added by manufacture[4] (million dollars) | Cost of materials (million dollars) | Value of shipments (million dollars) | New capital expenditures (million dollars) | All employees[3] (1,000) | Value added by manufacture (million dollars) |
| **INDUSTRY 3561, PUMPS AND PUMPING EQUIPMENT** | | | | | | | | | | | | | | |
| **United States** | - | 626 | 325 | **68.5** | **1 484.7** | **39.1** | **74.7** | 772.0 | 3 336.8 | **2 742.4** | 6 198.3 | **227.5** | **63.0** | **2 141.6** |
| Arkansas | - | 8 | 4 | CC | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | CC | (D) |
| California | - | 86 | 42 | 8.5 | 200.3 | 4.6 | 9.2 | 93.3 | 468.8 | 385.4 | 871.1 | 36.6 | 8.1 | 301.1 |
| Colorado | - | 5 | 3 | CC | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | BB | (D) |
| Connecticut | - | 5 | 1 | BB | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | .3 | 8.3 |
| Florida | E1 | 19 | 11 | .8 | 16.7 | .5 | 1.3 | 10.0 | 42.6 | 19.6 | 63.0 | 3.6 | .5 | 12.8 |
| Georgia | - | 7 | 6 | .8 | 14.3 | .5 | .9 | 7.3 | 36.5 | 30.5 | 68.2 | 3.5 | .8 | 29.2 |
| Illinois | - | 36 | 23 | 4.6 | 101.5 | 2.7 | 4.9 | 54.6 | 223.3 | 230.9 | 471.2 | 14.5 | 4.9 | 134.0 |
| Indiana | - | 14 | 7 | 1.4 | 24.9 | .8 | 1.5 | 12.5 | 64.0 | 58.6 | 124.3 | 1.4 | 1.1 | 34.8 |
| Iowa | - | 10 | 5 | 2.2 | 45.5 | 1.2 | 2.1 | 23.0 | 140.9 | 64.6 | 208.0 | (D) | 2.5 | 84.6 |
| Kansas | - | 13 | 5 | 2.5 | 39.9 | 1.3 | 2.1 | 22.5 | 83.0 | 64.0 | 157.0 | 7.0 | FF | (D) |
| Kentucky | - | 3 | 3 | .3 | 4.3 | .2 | .4 | 2.8 | 14.8 | 10.6 | 25.9 | .2 | (NA) | (NA) |
| Louisiana | - | 10 | 6 | .6 | 11.8 | .4 | .5 | 6.6 | 22.5 | 22.3 | 47.3 | 2.2 | BB | (D) |
| Maine | - | 2 | 1 | BB | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | BB | (D) |
| Maryland | - | 2 | 1 | AA | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | AA | (D) |
| Massachusetts | E1 | 12 | 8 | 1.3 | 26.9 | .7 | 1.4 | 14.4 | 88.3 | 38.8 | 129.5 | 5.7 | 1.1 | 37.9 |
| Michigan | - | 26 | 12 | 2.7 | 60.5 | 1.5 | 2.9 | 34.3 | 104.0 | 73.2 | 185.0 | 3.7 | 2.2 | 76.0 |
| Minnesota | - | 13 | 6 | 2.0 | 44.7 | 1.1 | 2.2 | 20.4 | 94.0 | 62.3 | 152.5 | 9.1 | 2.5 | 101.3 |
| Mississippi | - | 5 | 3 | EE | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | EE | (D) |
| Missouri | - | 7 | 4 | 1.5 | 35.9 | 1.0 | 2.1 | 22.8 | 81.0 | 26.7 | 110.5 | 3.8 | .9 | 26.2 |
| Nebraska | - | 8 | 6 | 1.1 | 21.9 | .8 | 1.4 | 13.3 | 49.9 | 30.4 | 85.7 | (D) | 1.7 | 49.8 |
| New Jersey | - | 23 | 7 | 2.7 | 60.8 | 1.5 | 2.7 | 30.4 | 145.0 | 108.1 | 264.1 | 6.8 | 3.0 | 110.9 |
| New York | - | 19 | 11 | 2.4 | 48.6 | 1.3 | 2.4 | 25.7 | 154.9 | 115.7 | 264.5 | 10.2 | 2.7 | 100.8 |
| North Carolina | - | 4 | 3 | CC | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (NA) | (NA) |
| Ohio | - | 45 | 22 | 6.2 | 135.8 | 3.7 | 6.8 | 70.3 | 262.5 | 219.0 | 500.9 | 13.2 | 9.3 | 291.5 |
| Oklahoma | - | 30 | 20 | 4.8 | 106.9 | 2.9 | 5.4 | 57.4 | 218.9 | 174.2 | 394.5 | 10.1 | 1.8 | 83.3 |
| Oregon | - | 7 | 4 | EE | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | EE | (D) |
| Pennsylvania | - | 36 | 17 | 3.6 | 85.6 | 2.2 | 4.4 | 45.2 | 181.2 | 133.0 | 309.0 | 7.2 | 3.7 | 123.0 |
| Rhode Island | - | 4 | 3 | BB | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | BB | (D) |
| Tennessee | - | 9 | 5 | .6 | 10.8 | .3 | .7 | 5.3 | 33.2 | 25.5 | 59.2 | 1.0 | .7 | 22.1 |
| Texas | - | 92 | 45 | 8.8 | 197.0 | 5.1 | 10.3 | 112.2 | 419.0 | 515.6 | 941.0 | 56.0 | 3.7 | 134.2 |
| Utah | - | 3 | 1 | BB | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | BB | (D) |
| West Virginia | - | 7 | 6 | .4 | 8.0 | .3 | .5 | 4.6 | 14.0 | 8.1 | 21.7 | .9 | (NA) | (NA) |
| Wisconsin | - | 26 | 14 | 2.1 | 45.2 | 1.1 | 2.1 | 22.4 | 90.1 | 90.1 | 186.1 | 4.2 | 2.5 | 88.1 |
| Wyoming | E1 | 2 | 1 | AA | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (NA) | (NA) |

See footnotes at end of table.

## Table 2. Industry Statistics for Selected States: 1982 and 1977—Con.

[Excludes data for auxiliaries. Includes data for States with 150 employees or more. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Industry and geographic area | | 1982 | | | | | | | | | | | 1977 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | All establishments[2] | | All employees | | Production workers | | | Value added by manufacture[4] (million dollars) | Cost of materials (million dollars) | Value of shipments (million dollars) | New capital expenditures (million dollars) | All employees[3] (1,000) | Value added by manufacture (million dollars) |
| | E[1] | Total (no.) | With 20 employees or more (no.) | Number[3] (1,000) | Payroll (million dollars) | Number (1,000) | Hours (millions) | Wages (million dollars) | | | | | | |
| **INDUSTRY 3562, BALL AND ROLLER BEARINGS** | | | | | | | | | | | | | | |
| **United States** | - | **161** | **115** | **43.7** | **907.0** | **33.5** | **62.6** | **645.9** | **1 839.2** | **1 215.8** | **3 135.8** | **164.5** | **50.6** | **1 472.7** |
| Alabama | - | 1 | 1 | CC | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | BB | (D) |
| California | E1 | 10 | 4 | .6 | 14.6 | .4 | 2.1 | 9.2 | 32.5 | 22.3 | 55.1 | .9 | .2 | 6.4 |
| Connecticut | - | 20 | 12 | 7.9 | 159.7 | 5.8 | 11.1 | 116.7 | 228.9 | 107.7 | 373.5 | 18.8 | 11.5 | 318.2 |
| Georgia | E1 | 6 | 6 | EE | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | CC | (D) |
| Illinois | - | 15 | 8 | 1.9 | 39.3 | 1.5 | 2.8 | 28.6 | 84.3 | 59.8 | 155.7 | 8.0 | 2.7 | 91.1 |
| Indiana | - | 12 | 12 | 3.7 | 74.3 | 2.6 | 4.8 | 49.5 | 170.2 | 81.5 | 265.2 | 12.4 | 3.4 | 101.2 |
| Iowa | - | 1 | 1 | AA | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | AA | (D) |
| Kansas | - | 2 | 1 | BB | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | BB | (D) |
| Kentucky | - | 2 | 2 | CC | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | CC | (D) |
| Michigan | - | 7 | 4 | EE | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | 1.2 | 31.1 |
| Missouri | - | 1 | 1 | BB | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | BB | (D) |
| New Hampshire | - | 4 | 4 | EE | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | EE | (D) |
| New Jersey | - | 6 | 3 | EE | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | 2.9 | 90.9 |
| New York | - | 14 | 9 | 2.6 | 53.2 | 2.0 | 3.8 | 39.3 | 121.8 | 70.7 | 183.2 | 3.2 | 3.2 | 83.5 |
| North Carolina | - | 5 | 4 | .8 | 12.4 | .6 | 1.1 | 8.3 | 14.4 | 33.0 | 46.6 | (D) | AA | (D) |
| Ohio | - | 10 | 10 | FF | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | FF | (D) |
| Oklahoma | E2 | 3 | 2 | BB | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | AA | (D) |
| Pennsylvania | - | 14 | 9 | FF | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | 3.7 | 116.3 |
| South Carolina | - | 11 | 10 | 4.1 | 65.1 | 3.1 | 5.5 | 43.9 | 179.6 | 125.5 | 306.7 | (D) | 3.9 | 120.5 |
| Tennessee | - | 6 | 5 | 1.5 | 24.2 | 1.2 | 2.1 | 17.9 | 91.1 | 51.7 | 145.1 | 6.0 | 1.3 | 39.9 |
| Virginia | - | 1 | 1 | BB | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | BB | (D) |
| **INDUSTRY 3563, AIR AND GAS COMPRESSORS** | | | | | | | | | | | | | | |
| **United States** | - | **282** | **144** | **32.1** | **709.3** | **17.5** | **34.1** | **344.0** | **1 470.6** | **1 698.3** | **3 270.0** | **118.1** | **32.0** | **1 145.5** |
| California | E2 | 28 | 10 | .8 | 16.6 | .5 | .9 | 8.0 | 37.3 | 36.1 | 73.3 | 1.7 | .6 | 14.9 |
| Connecticut | - | 8 | 4 | CC | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | CC | (D) |
| Florida | E2 | 15 | 3 | .2 | 3.8 | .1 | .3 | 1.8 | 7.7 | 8.1 | 16.0 | .4 | (NA) | (NA) |
| Illinois | - | 19 | 12 | 2.9 | 56.9 | 1.7 | 3.2 | 29.4 | 167.1 | 169.2 | 329.0 | 5.7 | 4.2 | 165.4 |
| Indiana | - | 12 | 5 | 1.8 | 43.4 | .9 | 1.7 | 18.0 | 101.1 | 149.3 | 258.2 | 10.7 | 3.2 | 89.7 |
| Kentucky | - | 6 | 5 | CC | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | CC | (D) |
| Louisiana | E1 | 3 | 2 | AA | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (NA) | (NA) |
| Massachusetts | - | 5 | 3 | CC | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | CC | (D) |
| Michigan | - | 14 | 8 | 1.5 | 39.5 | .9 | 1.7 | 19.6 | 83.9 | 108.0 | 199.5 | 4.3 | .7 | 27.9 |
| Minnesota | - | 6 | 2 | BB | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (NA) | (NA) |
| Missouri | - | 5 | 3 | .4 | 6.1 | .2 | .4 | 4.0 | 25.6 | 19.8 | 48.2 | (D) | BB | (D) |
| New Hampshire | - | 4 | 3 | .2 | 5.1 | .1 | .2 | 2.2 | 6.8 | 10.5 | 18.7 | (D) | (NA) | (NA) |
| New Jersey | E1 | 8 | 4 | CC | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | CC | (D) |
| New York | - | 15 | 12 | 6.5 | 154.6 | 3.3 | 6.0 | 73.5 | 309.9 | 281.0 | 615.9 | 21.9 | 6.9 | 288.4 |
| North Carolina | - | 6 | 4 | EE | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | CC | (D) |
| Ohio | - | 23 | 13 | 3.9 | 83.9 | 1.9 | 3.9 | 36.3 | 129.8 | 197.2 | 334.6 | 3.6 | 4.5 | 128.3 |
| Oklahoma | - | 19 | 10 | 1.0 | 20.6 | .7 | 1.4 | 13.3 | 36.6 | 75.2 | 110.2 | 3.2 | .4 | 12.0 |
| Pennsylvania | - | 25 | 16 | 5.6 | 122.4 | 3.4 | 6.7 | 65.3 | 266.5 | 201.8 | 495.5 | 28.4 | 5.2 | 210.3 |
| Texas | - | 29 | 16 | 1.4 | 33.8 | .8 | 1.6 | 16.0 | 64.4 | 106.6 | 170.8 | 22.2 | .8 | 28.9 |
| Wisconsin | - | 5 | 2 | BB | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | .6 | 17.9 |
| **INDUSTRY 3564, BLOWERS AND FANS** | | | | | | | | | | | | | | |
| **United States** | - | **502** | **240** | **29.8** | **553.6** | **19.1** | **37.2** | **306.0** | **1 160.0** | **999.8** | **2 173.5** | **57.1** | **28.0** | **776.7** |
| Alabama | - | 10 | 4 | .5 | 10.2 | .3 | .6 | 4.7 | 15.3 | 15.4 | 30.7 | .5 | BB | (D) |
| Arkansas | - | 2 | 2 | AA | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | AA | (D) |
| California | - | 61 | 29 | 2.7 | 48.6 | 1.9 | 3.8 | 28.3 | 114.7 | 89.0 | 210.0 | 4.9 | 2.5 | 65.1 |
| Connecticut | - | 11 | 8 | 1.7 | 35.3 | 1.0 | 2.3 | 19.0 | 54.6 | 59.9 | 117.2 | 4.1 | 1.0 | 24.8 |
| Florida | E2 | 14 | 5 | .4 | 5.5 | .3 | .6 | 3.8 | 12.1 | 11.7 | 24.2 | .3 | .5 | 4.3 |
| Illinois | E1 | 40 | 19 | 1.8 | 33.8 | 1.3 | 2.4 | 20.1 | 80.4 | 78.1 | 156.2 | 3.9 | 1.8 | 48.2 |
| Indiana | - | 18 | 9 | 1.8 | 38.1 | 1.3 | 2.6 | 23.4 | 65.6 | 57.9 | 124.9 | 5.5 | 2.1 | 54.6 |
| Iowa | - | 2 | 2 | AA | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (NA) | (NA) |
| Kansas | - | 6 | 3 | .2 | 4.9 | .1 | .3 | 2.6 | 9.8 | 6.8 | 16.7 | .3 | (NA) | (NA) |
| Kentucky | - | 9 | 9 | 1.0 | 17.4 | .6 | 1.1 | 10.9 | 38.1 | 27.6 | 66.8 | 1.2 | .8 | 24.1 |
| Maryland | - | 7 | 5 | .5 | 9.5 | .3 | .6 | 5.3 | 33.9 | 30.9 | 65.8 | .6 | CC | (D) |
| Massachusetts | - | 8 | 2 | CC | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | CC | (D) |
| Michigan | E1 | 25 | 12 | 1.3 | 23.5 | .7 | 1.3 | 12.4 | 55.0 | 35.0 | 88.2 | 1.6 | 1.5 | 43.0 |
| Minnesota | - | 15 | 8 | .8 | 18.6 | .5 | .9 | 12.5 | 40.6 | 26.4 | 67.4 | (D) | 1.2 | 32.9 |
| Missouri | E7 | 8 | 3 | CC | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | .3 | 8.7 |
| New Jersey | - | 18 | 13 | 1.3 | 24.6 | .6 | 1.0 | 9.4 | 52.4 | 79.8 | 133.3 | 1.9 | 1.2 | 37.3 |
| New York | - | 27 | 13 | 3.7 | 71.8 | 2.0 | 3.9 | 33.0 | 117.7 | 106.6 | 223.0 | 5.0 | 3.2 | 91.3 |
| North Carolina | - | 21 | 12 | 1.6 | 21.3 | 1.2 | 2.3 | 13.9 | 49.6 | 34.3 | 84.1 | (D) | 1.1 | 21.1 |
| Ohio | - | 35 | 23 | 2.7 | 48.7 | 1.7 | 3.2 | 26.6 | 107.5 | 93.0 | 202.0 | 5.5 | 3.4 | 85.9 |
| Oklahoma | - | 8 | 3 | CC | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | CC | (D) |
| Oregon | - | 4 | 1 | BB | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | AA | (D) |
| Pennsylvania | - | 28 | 15 | 1.7 | 35.7 | 1.0 | 1.8 | 15.6 | 123.7 | 47.6 | 172.3 | 2.9 | 1.6 | 57.4 |
| South Carolina | - | 6 | 2 | .2 | 2.4 | .2 | .3 | 1.4 | 6.0 | 4.1 | 9.3 | (D) | (NA) | (NA) |
| Tennessee | - | 14 | 6 | .8 | 12.3 | .5 | 1.0 | 7.5 | 22.1 | 25.4 | 46.6 | 2.6 | .7 | 19.8 |
| Texas | E1 | 43 | 15 | 1.3 | 19.2 | .9 | 1.8 | 11.3 | 34.2 | 39.2 | 72.5 | 1.5 | 1.1 | 25.0 |
| Wisconsin | - | 13 | 6 | .7 | 10.7 | .4 | .8 | 5.6 | 26.9 | 21.9 | 48.5 | 1.1 | .5 | 17.3 |

See footnotes at end of table.

## Table 2. Industry Statistics for Selected States: 1982 and 1977—Con.

[Excludes data for auxiliaries. Includes data for States with 150 employees or more. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Industry and geographic area | 1982 | | | | | | | | | | | 1977 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | All establishments[2] | | All employees | | Production workers | | | | | | | |
| | E[1] | Total (no.) | With 20 employees or more (no.) | Number[3] (1,000) | Payroll (million dollars) | Number (1,000) | Hours (millions) | Wages (million dollars) | Value added by manufacture[4] (million dollars) | Cost of materials (million dollars) | Value of shipments (million dollars) | New capital expenditures (million dollars) | All employees[3] (1,000) | Value added by manufacture (million dollars) |
| **INDUSTRY 3565, INDUSTRIAL PATTERNS** | | | | | | | | | | | | | |
| **United States** | **E1** | **996** | **105** | **9.8** | **217.6** | **8.1** | **14.8** | **173.4** | **347.6** | **97.6** | **452.3** | **15.8** | **9.3** | **252.5** |
| Alabama | – | 15 | 3 | BB | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | .2 | 6.5 |
| California | E1 | 96 | 7 | .7 | 14.6 | .5 | 1.0 | 11.2 | 23.0 | 6.4 | 29.3 | .8 | .5 | 14.6 |
| Illinois | E2 | 85 | 5 | .8 | 17.3 | .6 | 1.1 | 14.1 | 27.6 | 6.6 | 34.6 | 1.4 | .9 | 22.4 |
| Indiana | – | 37 | 8 | .5 | 11.3 | .4 | .7 | 9.1 | 17.1 | 4.1 | 21.1 | 1.0 | .4 | 12.9 |
| Massachusetts | E2 | 34 | 2 | .3 | 5.0 | .2 | .4 | 4.1 | 7.2 | 1.5 | 8.8 | .2 | .2 | 4.8 |
| Michigan | E1 | 131 | 28 | 1.9 | 51.8 | 1.5 | 2.9 | 40.9 | 81.0 | 26.5 | 112.9 | 2.9 | 2.6 | 79.0 |
| Minnesota | E2 | 22 | 1 | .2 | 5.6 | .2 | .3 | 4.2 | 8.5 | 3.5 | 12.1 | .7 | .2 | 4.6 |
| Missouri | E2 | 22 | 1 | AA | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | AA | (D) |
| New Jersey | E4 | 31 | 3 | .3 | 6.5 | .2 | .4 | 5.6 | 10.6 | 3.3 | 13.8 | .6 | AA | (D) |
| New York | E1 | 51 | 7 | .5 | 9.2 | .4 | .8 | 7.4 | 15.8 | 5.4 | 21.6 | .6 | BB | (D) |
| Ohio | E2 | 120 | 7 | EE | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | 1.1 | 28.1 |
| Oklahoma | E4 | 15 | 3 | .2 | 2.3 | .2 | .3 | 1.9 | 4.3 | 1.0 | 5.4 | .3 | (NA) | (NA) |
| Oregon | E3 | 17 | 2 | .2 | 4.2 | .1 | .2 | 3.1 | 6.6 | 1.2 | 7.8 | .3 | .2 | 3.9 |
| Pennsylvania | E1 | 72 | 9 | CC | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | .7 | 12.8 |
| Texas | E2 | 33 | 2 | BB | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (NA) | (NA) |
| Wisconsin | E1 | 67 | 6 | CC | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | .7 | 17.8 |
| **INDUSTRY 3566, SPEED CHANGERS, DRIVES, AND GEARS** | | | | | | | | | | | | | |
| **United States** | **–** | **307** | **178** | **23.8** | **499.4** | **15.7** | **29.4** | **295.7** | **1 011.0** | **551.1** | **1 621.3** | **90.9** | **25.3** | **803.1** |
| California | E1 | 24 | 5 | .7 | 11.9 | .4 | .7 | 6.9 | 29.1 | 10.1 | 40.7 | 1.8 | .9 | 31.3 |
| Colorado | – | 3 | 2 | BB | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | BB | (D) |
| Connecticut | – | 7 | 5 | .4 | 5.7 | .3 | .5 | 4.1 | 11.2 | 5.5 | 17.1 | .5 | .4 | 12.4 |
| Illinois | – | 43 | 27 | 3.7 | 77.3 | 2.5 | 4.5 | 46.2 | 163.0 | 85.6 | 252.0 | 16.7 | 4.1 | 127.5 |
| Indiana | – | 10 | 8 | 2.0 | 43.1 | 1.4 | 2.3 | 26.9 | 114.9 | 50.5 | 171.5 | 20.6 | 2.6 | 81.9 |
| Iowa | E2 | 6 | 4 | .2 | 3.3 | .1 | .2 | 2.0 | 5.6 | 3.4 | 9.5 | .1 | AA | (D) |
| Kansas | – | 2 | 2 | CC | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | CC | (D) |
| Massachusetts | E1 | 18 | 11 | 1.3 | 24.6 | .8 | 1.5 | 13.6 | 54.6 | 28.4 | 80.6 | 1.4 | 1.3 | 43.3 |
| Michigan | – | 27 | 15 | EE | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | 1.0 | 31.5 |
| Minnesota | – | 7 | 5 | BB | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | .4 | 10.0 |
| Missouri | – | 8 | 8 | .5 | 9.1 | .3 | .7 | 5.6 | 17.3 | 13.8 | 31.9 | .5 | .3 | 10.5 |
| New Jersey | – | 15 | 11 | 1.0 | 24.4 | .7 | 1.3 | 14.6 | 43.3 | 24.8 | 69.3 | 3.1 | 1.0 | 29.6 |
| New York | – | 29 | 14 | 1.4 | 25.1 | 1.0 | 1.6 | 15.9 | 51.1 | 27.0 | 76.5 | 3.1 | 1.0 | 28.6 |
| North Carolina | – | 7 | 5 | .4 | 7.1 | .2 | .5 | 3.7 | 14.4 | 6.8 | 23.0 | (D) | .3 | 6.9 |
| Ohio | – | 27 | 17 | 2.3 | 54.3 | 1.5 | 3.0 | 30.7 | 97.4 | 71.9 | 177.4 | 9.0 | 2.7 | 83.0 |
| Oklahoma | – | 2 | 1 | AA | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | AA | (D) |
| Pennsylvania | – | 19 | 12 | 2.1 | 51.7 | 1.3 | 3.2 | 29.3 | 88.5 | 64.5 | 162.4 | 7.8 | 2.4 | 78.4 |
| South Carolina | – | 4 | 3 | CC | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | AA | (D) |
| South Dakota | – | 1 | 1 | AA | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | BB | (D) |
| Texas | – | 7 | 5 | .3 | 7.0 | .2 | .5 | 4.5 | 14.1 | 15.3 | 29.2 | 1.4 | (NA) | (NA) |
| Wisconsin | – | 23 | 9 | 3.5 | 73.4 | 2.0 | 3.3 | 41.2 | 147.1 | 55.2 | 222.2 | 14.5 | 4.1 | 149.2 |
| **INDUSTRY 3567, INDUSTRIAL FURNACES AND OVENS** | | | | | | | | | | | | | |
| **United States** | **–** | **354** | **173** | **16.5** | **323.3** | **9.4** | **18.3** | **154.1** | **646.2** | **471.6** | **1 130.6** | **21.9** | **15.2** | **469.3** |
| Alabama | – | 4 | 2 | AA | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | AA | (D) |
| California | E1 | 45 | 11 | 1.1 | 18.8 | .7 | 1.6 | 10.6 | 32.0 | 27.5 | 63.9 | .8 | .9 | 23.7 |
| Connecticut | – | 7 | 2 | .3 | 5.1 | .1 | .3 | 2.0 | 7.4 | 6.5 | 14.0 | .1 | .5 | 12.6 |
| Illinois | – | 21 | 13 | 1.4 | 25.0 | .8 | 1.6 | 11.1 | 54.0 | 34.9 | 90.1 | 1.0 | 1.2 | 31.0 |
| Indiana | – | 12 | 3 | .6 | 12.3 | .4 | .8 | 6.8 | 16.4 | 14.5 | 30.8 | 1.0 | .8 | 21.6 |
| Kansas | – | 5 | 3 | BB | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (NA) | (NA) |
| Massachusetts | E1 | 17 | 6 | 1.2 | 20.7 | .8 | 1.6 | 10.7 | 38.5 | 31.3 | 72.5 | 1.5 | .6 | 16.3 |
| Michigan | – | 35 | 17 | 1.0 | 20.5 | .7 | 1.2 | 10.5 | 44.0 | 42.2 | 86.1 | (D) | 1.4 | 59.3 |
| Minnesota | E1 | 7 | 4 | .6 | 12.2 | .4 | .7 | 6.4 | 21.6 | 11.8 | 34.2 | 2.4 | BB | (D) |
| Missouri | – | 10 | 8 | .6 | 11.6 | .3 | .7 | 5.6 | 25.7 | 9.2 | 36.5 | 1.5 | .4 | 9.7 |
| Nebraska | – | 1 | 1 | AA | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (NA) | (NA) |
| New Jersey | E1 | 21 | 11 | 1.0 | 19.7 | .5 | .8 | 7.8 | 47.3 | 36.4 | 83.4 | 1.0 | 1.1 | 36.5 |
| New York | – | 18 | 10 | .7 | 14.9 | .4 | .8 | 7.2 | 23.6 | 18.0 | 40.5 | .3 | .4 | 12.1 |
| Ohio | – | 41 | 21 | 2.1 | 48.5 | .9 | 1.8 | 18.2 | 87.9 | 67.0 | 155.5 | 3.0 | 2.1 | 74.8 |
| Pennsylvania | E1 | 27 | 21 | 2.0 | 42.1 | 1.1 | 2.0 | 19.7 | 97.3 | 69.4 | 168.0 | 2.0 | 3.1 | 92.9 |
| Rhode Island | – | 5 | 3 | .2 | 4.0 | .1 | .2 | 2.2 | 6.1 | 5.0 | 10.9 | (D) | AA | (D) |
| Tennessee | – | 3 | 3 | BB | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (NA) | (NA) |
| Texas | E2 | 18 | 8 | .4 | 7.7 | .2 | .5 | 3.6 | 13.3 | 12.2 | 25.0 | (D) | AA | (D) |
| Utah | – | 1 | 1 | BB | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | BB | (D) |
| Wisconsin | E3 | 17 | 12 | .9 | 19.1 | .5 | 1.0 | 8.3 | 41.2 | 22.1 | 63.8 | 2.4 | .8 | 21.4 |

See footnotes at end of table.

## Table 2. **Industry Statistics for Selected States: 1982 and 1977**—Con.

[Excludes data for auxiliaries. Includes data for States with 150 employees or more. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Industry and geographic area | 1982 | | | | | | | | | | | 1977 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | All establishments[2] | | All employees | | Production workers | | | | | | | |
| | E[1] | Total (no.) | With 20 employees or more (no.) | Number[3] (1,000) | Payroll (million dollars) | Number (1,000) | Hours (millions) | Wages (million dollars) | Value added by manufacture[4] (million dollars) | Cost of materials (million dollars) | Value of shipments (million dollars) | New capital expenditures (million dollars) | All employees[3] (1,000) | Value added by manufacture (million dollars) |
| **INDUSTRY 3568, POWER TRANSMISSION EQUIPMENT, N.E.C.** | | | | | | | | | | | | | | |
| **United States** | - | **294** | 195 | **27.1** | **556.4** | **18.1** | **33.3** | **337.2** | **1 153.9** | **767.4** | **1 940.5** | **75.0** | **32.5** | **1 009.1** |
| Arkansas | - | 2 | 2 | AA | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | BB | (D) |
| California | E1 | 29 | 14 | 1.4 | 31.8 | .9 | 1.9 | 18.5 | 64.5 | 44.6 | 112.0 | 2.7 | 1.5 | 44.7 |
| Connecticut | - | 12 | 6 | 1.0 | 19.1 | .7 | 1.4 | 12.2 | 37.5 | 16.4 | 54.3 | (D) | .9 | 24.2 |
| Georgia | - | 5 | 5 | .4 | 5.7 | .3 | .5 | 4.5 | 24.8 | 15.1 | 39.0 | 4.0 | (NA) | (NA) |
| Illinois | - | 27 | 21 | 4.2 | 84.9 | 2.6 | 4.3 | 45.7 | 166.4 | 114.4 | 288.2 | 9.8 | 4.5 | 142.6 |
| Indiana | - | 6 | 6 | 2.7 | 55.3 | 1.9 | 3.2 | 35.9 | 105.0 | 49.3 | 152.7 | 4.1 | 5.8 | 163.2 |
| Iowa | - | 2 | 2 | AA | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | AA | (D) |
| Kentucky | - | 1 | 1 | EE | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | EE | (D) |
| Louisiana | - | 2 | 2 | AA | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (NA) | (NA) |
| Maryland | - | 2 | 2 | CC | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | BB | (D) |
| Massachusetts | - | 11 | 8 | 1.0 | 21.0 | .7 | 1.2 | 13.3 | 42.6 | 20.3 | 65.6 | .9 | 1.8 | 58.4 |
| Michigan | - | 24 | 15 | 1.8 | 40.2 | 1.3 | 2.6 | 27.8 | 85.0 | 53.4 | 138.5 | 3.1 | 3.9 | 150.9 |
| Minnesota | - | 7 | 6 | .6 | 13.0 | .4 | .8 | 8.7 | 25.0 | 17.2 | 43.5 | 1.6 | .4 | 15.0 |
| Nebraska | - | 5 | 4 | AA | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (NA) | (NA) |
| New Hampshire | - | 3 | 3 | .4 | 6.4 | .3 | .5 | 4.2 | 20.0 | 7.6 | 27.5 | .1 | (NA) | (NA) |
| New Jersey | - | 10 | 6 | .5 | 8.2 | .3 | .6 | 4.4 | 14.4 | 11.3 | 26.7 | .6 | .5 | 13.6 |
| New York | - | 11 | 6 | .5 | 9.6 | .3 | .5 | 4.5 | 15.7 | 6.8 | 22.8 | 1.8 | BB | (D) |
| North Carolina | - | 8 | 5 | .4 | 7.5 | .3 | .6 | 4.1 | 23.8 | 16.6 | 34.4 | (D) | (NA) | (NA) |
| Ohio | - | 34 | 21 | 1.8 | 36.1 | 1.2 | 2.2 | 21.9 | 68.6 | 63.2 | 138.1 | 6.3 | 2.3 | 65.4 |
| Pennsylvania | - | 20 | 11 | 3.0 | 57.5 | 2.0 | 3.7 | 35.3 | 110.6 | 67.9 | 174.6 | 8.8 | 3.2 | 82.6 |
| South Carolina | - | 3 | 2 | AA | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (NA) | (NA) |
| Tennessee | - | 6 | 5 | .4 | 7.4 | .3 | .6 | 4.2 | 17.1 | 13.3 | 30.8 | .8 | BB | (D) |
| Texas | E1 | 21 | 14 | .9 | 18.4 | .7 | 1.3 | 11.6 | 35.9 | 29.4 | 63.7 | 3.9 | .8 | 24.3 |
| Virginia | - | 1 | 1 | CC | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | BB | (D) |
| Wisconsin | - | 17 | 12 | 2.2 | 57.0 | 1.5 | 2.6 | 34.2 | 138.1 | 83.5 | 229.6 | 7.3 | 2.6 | 90.8 |
| **INDUSTRY 3569, GENERAL INDUSTRIAL MACHINERY, N.E.C.** | | | | | | | | | | | | | | |
| **United States** | **E1** | **1 460** | 565 | **63.1** | **1 256.0** | **37.4** | **73.7** | **621.4** | **2 623.9** | **1 893.0** | **4 566.5** | **132.3** | **57.5** | **1 602.2** |
| Alabama | E1 | 9 | 5 | BB | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | .3 | 6.0 |
| Arkansas | - | 7 | 1 | BB | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | .2 | 2.9 |
| California | E2 | 190 | 66 | 5.9 | 116.5 | 3.5 | 6.8 | 55.6 | 264.5 | 196.6 | 462.3 | 8.5 | 6.2 | 161.1 |
| Connecticut | - | 43 | 18 | 2.3 | 44.5 | 1.2 | 2.7 | 19.7 | 98.9 | 108.6 | 211.8 | 6.4 | 2.5 | 78.9 |
| Delaware | - | 2 | 1 | AA | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (NA) | (NA) |
| Florida | E2 | 54 | 19 | 2.4 | 39.2 | 1.4 | 2.7 | 18.8 | 113.4 | 55.2 | 172.4 | (D) | 1.1 | 27.1 |
| Georgia | - | 37 | 10 | 1.0 | 18.5 | .7 | 1.2 | 9.2 | 42.2 | 40.8 | 83.7 | 2.0 | .8 | 17.5 |
| Illinois | E1 | 102 | 40 | 4.8 | 102.0 | 3.2 | 6.1 | 58.2 | 194.8 | 129.3 | 330.2 | 10.4 | 4.5 | 133.3 |
| Indiana | - | 35 | 15 | 1.2 | 22.6 | .8 | 1.6 | 12.8 | 49.0 | 33.6 | 83.5 | 2.3 | 1.1 | 31.5 |
| Iowa | E3 | 17 | 3 | .2 | 2.8 | .1 | .2 | 1.6 | 4.4 | 4.3 | 8.8 | .1 | .2 | 4.3 |
| Kansas | - | 15 | 5 | .6 | 12.5 | .5 | 1.0 | 8.7 | 18.3 | 43.9 | 63.1 | (D) | .5 | 11.8 |
| Kentucky | - | 9 | 5 | .5 | 9.1 | .3 | .7 | 4.8 | 17.8 | 11.9 | 29.0 | .8 | .6 | 11.8 |
| Maryland | - | 12 | 5 | EE | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | BB | (D) |
| Massachusetts | E1 | 42 | 20 | 4.3 | 106.1 | 2.1 | 4.2 | 44.5 | 175.5 | 94.0 | 274.2 | 13.5 | 3.3 | 88.9 |
| Michigan | E1 | 103 | 39 | 3.7 | 77.2 | 2.0 | 3.9 | 34.2 | 159.5 | 113.7 | 277.4 | 7.8 | 4.0 | 144.8 |
| Minnesota | E1 | 38 | 14 | 1.2 | 23.6 | .7 | 1.4 | 11.8 | 40.4 | 25.2 | 66.3 | 1.2 | 1.3 | 31.6 |
| Missouri | - | 16 | 7 | .6 | 9.9 | .4 | .7 | 5.2 | 18.9 | 18.0 | 37.8 | .7 | .4 | 7.5 |
| New Hampshire | - | 6 | 5 | 1.2 | 26.1 | .6 | 2.5 | 11.2 | 71.3 | 35.9 | 106.6 | 4.3 | EE | (D) |
| New Jersey | E3 | 114 | 43 | 4.2 | 84.3 | 2.6 | 5.7 | 45.1 | 161.5 | 175.9 | 340.7 | 3.5 | 3.5 | 104.8 |
| New Mexico | - | 5 | 2 | BB | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | .2 | 4.6 |
| New York | E1 | 96 | 35 | 5.4 | 113.5 | 3.2 | 6.0 | 55.3 | 240.5 | 149.8 | 389.0 | 11.0 | 5.1 | 157.7 |
| North Carolina | - | 31 | 13 | 1.6 | 27.1 | 1.0 | 1.9 | 12.9 | 65.8 | 37.1 | 102.6 | (D) | 1.9 | 38.6 |
| Ohio | E1 | 92 | 46 | 5.0 | 92.1 | 2.8 | 5.6 | 43.3 | 225.6 | 128.2 | 358.6 | 8.5 | FF | (D) |
| Oklahoma | E1 | 25 | 13 | 1.0 | 17.9 | .6 | 1.0 | 8.7 | 30.4 | 41.1 | 71.4 | 2.7 | .8 | 16.9 |
| Pennsylvania | E1 | 82 | 32 | 3.9 | 80.3 | 2.5 | 4.8 | 43.8 | 150.8 | 113.7 | 275.2 | 10.2 | 4.3 | 111.2 |
| South Carolina | - | 11 | 5 | .4 | 7.4 | .2 | .4 | 3.2 | 16.3 | 23.3 | 38.9 | (D) | CC | (D) |
| Tennessee | E2 | 20 | 10 | .5 | 8.7 | .3 | .6 | 4.3 | 16.9 | 15.1 | 31.9 | .6 | .6 | 12.0 |
| Texas | E1 | 100 | 45 | 3.4 | 61.6 | 2.2 | 3.9 | 33.0 | 134.5 | 105.3 | 241.9 | 9.5 | 2.0 | 46.2 |
| Utah | - | 5 | 3 | CC | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | EE | (D) |
| Virginia | E2 | 12 | 3 | .3 | 5.8 | .2 | .4 | 3.0 | 17.0 | 11.6 | 29.0 | (D) | .5 | 10.9 |
| Washington | E5 | 23 | 6 | .6 | 11.0 | .4 | .7 | 5.3 | 22.9 | 16.0 | 38.6 | .5 | .5 | 13.1 |
| Wisconsin | E2 | 39 | 20 | 2.9 | 62.4 | 1.7 | 3.1 | 33.3 | 113.7 | 55.4 | 169.9 | 4.0 | FF | (D) |

Note: For qualifications of data, see footnotes on table 1a.

[1]Payroll and sales data for some small single-unit companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate the items shown for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at time data were tabulated. The following symbols are shown for those States where estimated data based on administrative records data account for 10 percent or more of figures shown: E1—10 to 19 percent; E2—20 to 29 percent; E3—30 to 39 percent; E4—40 to 49 percent; E5—50 to 59 percent; E6—60 to 69 percent; E7—70 to 79 percent; E8—80 to 89 percent; E9—90 percent or more.

[2]Includes establishments with payroll at any time during year.

[3]Statistics for some producing States have been withheld to avoid disclosing data for individual companies. However, for States with 150 employees or more, number of establishments is shown and employment size range is indicated by one of the following symbols: AA—150 to 249 employees; BB—250 to 499 employees; CC—500 to 999 employees; EE—1,000 to 2,499 employees; FF—2,500 employees or more.

[4]Beginning in 1982, all respondents were requested to report their inventories at cost or market prior to adjustment to LIFO cost. This is a change from prior years in which respondents were permitted to value their inventories using any generally accepted accounting method. Consequently, data for inventories and value added by manufacture are not comparable to prior-year data.

## Table 3a. Summary Statistics for the Industry: 1982

[For meaning of ebbreviations and symbols, see introductory text. For explenation of terms, see appendixes]

| Item | Pumps and pumping equipment (SIC 3561) | Ball and roller bearings (SIC 3562) | Air and gas compres-sors (SIC 3563) | Blowers and fans (SIC 3564) | Industrial patterns (SIC 3565) | Speed changers, drives, and gears (SIC 3566) | Industrial furneces end ovens (SIC 3567) | Power transmission equipment, n.e.c. (SIC 3568) | Generel industrial mechinery, n.e.c. (SIC 3569) |
|---|---|---|---|---|---|---|---|---|---|
| Companies[1] ---- number | 518 | 107 | 239 | 450 | 994 | 282 | 322 | 243 | 1 391 |
| All establishments[2] ---- do | 626 | 161 | 282 | 502 | 996 | 307 | 354 | 294 | 1 460 |
| With 1 to 19 employees ---- do | 301 | 46 | 138 | 262 | 891 | 129 | 181 | 99 | 895 |
| With 20 to 99 employees ---- do | 168 | 36 | 84 | 161 | 102 | 120 | 133 | 129 | 412 |
| With 100 employees or more ---- do | 157 | 79 | 60 | 79 | 3 | 58 | 40 | 66 | 153 |
| All employees: | | | | | | | | | |
| Average for year ---- 1,000 | 68.5 | 43.7 | 32.1 | 29.8 | 9.8 | 23.8 | 16.5 | 27.1 | 63.1 |
| Annual payroll[3] ---- mil. dol. | 1 484.7 | 907.0 | 709.3 | 553.6 | 217.6 | 499.4 | 323.3 | 556.4 | 1 256.0 |
| Production workers: | | | | | | | | | |
| Average for year ---- 1,000 | 39.1 | 33.5 | 17.5 | 19.1 | 8.1 | 15.7 | 9.4 | 18.1 | 37.4 |
| March ---- do | 44.9 | 37.5 | 18.5 | 19.7 | 8.1 | 18.0 | 10.1 | 20.3 | 39.1 |
| May ---- do | 40.8 | 35.9 | 18.2 | 19.7 | 8.2 | 16.5 | 9.6 | 19.0 | 38.2 |
| August ---- do | 36.7 | 32.1 | 16.8 | 18.9 | 8.0 | 14.6 | 9.0 | 17.2 | 36.9 |
| November ---- do | 34.1 | 28.6 | 16.6 | 18.3 | 7.9 | 13.5 | 9.0 | 15.7 | 35.3 |
| Hours ---- millions | 74.7 | 62.6 | 34.1 | 37.2 | 14.8 | 29.4 | 18.3 | 33.3 | 73.7 |
| January to March ---- do | 21.9 | 18.1 | 9.3 | 9.6 | 3.7 | 8.9 | 4.8 | 9.8 | 19.4 |
| April to June ---- do | 19.9 | 17.3 | 9.1 | 9.7 | 3.7 | 7.9 | 4.7 | 8.9 | 18.9 |
| July to September ---- do | 16.9 | 14.4 | 8.1 | 8.9 | 3.6 | 6.5 | 4.3 | 7.6 | 17.8 |
| October to December ---- do | 16.0 | 12.7 | 7.6 | 8.9 | 3.6 | 6.1 | 4.5 | 7.0 | 17.5 |
| Wages ---- mil. dol. | 772.0 | 645.9 | 344.0 | 306.0 | 173.4 | 295.7 | 154.1 | 337.2 | 621.4 |
| Value edded by manufecture[4] ---- do | 3 336.8 | 1 839.2 | 1 470.6 | 1 160.0 | 347.6 | 1 011.0 | 646.2 | 1 153.9 | 2 623.9 |
| Cost of materials, etc.[5] ---- do | 2 742.4 | 1 215.8 | 1 698.3 | 999.8 | 97.6 | 551.1 | 471.6 | 767.4 | 1 893.0 |
| Meterials, parts, containers, etc., consumed ---- do | 2 379.7 | 1 056.2 | 1 425.7 | 854.8 | 74.1 | 462.1 | 432.1 | 649.7 | 1 679.3 |
| Resales ---- do | 210.6 | 37.7 | 130.6 | 42.1 | .4 | 23.9 | 12.1 | 52.6 | 82.2 |
| Fuels consumed[6] ---- do | 20.8 | 39.3 | 15.7 | 10.8 | 2.7 | 10.0 | 4.9 | 13.5 | 19.4 |
| Purchased electric energy[7] ---- do | 54.9 | 62.4 | 23.2 | 17.5 | 4.1 | 19.0 | 9.0 | 26.0 | 39.4 |
| Contrect work ---- do | 76.4 | 20.1 | 103.1 | 74.7 | 16.3 | 36.2 | 13.4 | 25.5 | 72.8 |
| Value of shipments, including resales ---- do | 6 198.3 | 3 135.8 | 3 270.0 | 2 173.5 | 452.3 | 1 621.3 | 1 130.6 | 1 940.5 | 4 566.5 |
| Value of resales ---- do | 257.0 | 61.1 | 163.0 | 59.5 | 1.3 | 38.4 | 19.1 | 68.9 | 119.6 |
| Manufacturers' inventories (see tables 3b and 3c) | | | | | | | | | |
| Capital expenditures for plant and equipment[8] ---- do | 249.3 | 176.1 | 121.4 | 66.4 | 18.4 | 105.5 | 22.7 | 83.8 | 150.1 |
| New capital expenditures ---- do | 227.5 | 164.5 | 118.1 | 57.1 | 15.8 | 90.9 | 21.9 | 75.0 | 132.3 |
| New buildings and other structures ---- do | 58.8 | 15.4 | 31.4 | 12.6 | 2.0 | 10.5 | 6.1 | 13.1 | 34.2 |
| New machinery and equipment ---- do | 168.6 | 149.1 | 86.7 | 44.6 | 13.8 | 80.4 | 15.8 | 61.9 | 98.1 |
| Used capital expenditures ---- do | 21.8 | 11.7 | 3.3 | 9.3 | 2.6 | 14.7 | .8 | 8.9 | 17.8 |
| Primary product specialization ratio[9] ---- percent | 90 | 96 | 90 | 88 | 97 | 87 | 90 | 90 | 88 |
| Coverage ratio[10] ---- do | 90 | 99 | 91 | 92 | 76 | 87 | 94 | 84 | 86 |

[1]For the census, a company is defined as a business organizetion consisting of one establishment or more under common ownership or control.
[2]Includes establishments with payroll et any time during year.
[3]Data on supplemental labor costs are not included in annual payroll, but are shown in table 3d.
[4]Value added by manufacture is computed using inventory data reported on a cost or market basis prior to any adjustment to LIFO cost. See table 3b, footnote 1 for further explanation.
[5]Data on purchesed services for the repair of buildings and machinery and for communication services are not included in cost of materials, etc., but are shown in table 3d.
[6]Data on purchased fuels by type were not collected for 1982. See MC82-S-4, Fuels and Electric Energy Consumed, for 1981 data on purchased fuels by type.
[7]Data on quantity of electric energy used for heat and power are included in table 3d.
[8]Data on capital expenditures for new machinery and equipment by type, depreciable essets, retirements, rental payments, and depreciation are included in teble 3d.
[9]Represents ratio of primary product shipments to total product shipments (primary end secondary, excluding miscellaneous receipts) for establishments classified in industry.
[10]Represents ratio of primary products shipped by establishments classified in industry to total shipments of such products by all manufecturing establishments, wherever clessified.

## Table 3b. Value of Inventories for the Industry: End of 1981 and 1982

[Million dollars. For meaning of abbreviations and symbols, see introductory text. For explenation of terms, see appendixes]

| Item | Pumps and pumping equipment (SIC 3561) | | Ball and roller beerings (SIC 3562) | | Air and gas compressors (SIC 3563) | | Blowers and fans (SIC 3564) | | Industrial patterns (SIC 3565) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | End of 1981 | End of 1982 | End of 1981 | End of 1982 | End of 1981 | End of 1982 | End of 1981 | End of 1982 | End of 1981 | End of 1982 |
| **Total inventories[1]** ---- | **2 022.2** | **1 861.0** | 1 020.5 | 886.6 | **1 100.6** | 990.0 | **411.4** | **388.7** | **37.3** | 29.6 |
| Detail by method of valuation: | | | | | | | | | | |
| Subject to LIFO costing[2] ---- | 746.7 | 674.5 | 392.4 | 349.3 | 478.6 | 454.8 | 155.4 | 154.6 | .4 | .3 |
| LIFO reserve ---- | 208.4 | 206.2 | 191.6 | 183.3 | 174.8 | 176.8 | 42.2 | 44.7 | .1 | .1 |
| LIFO value ---- | 538.3 | 468.3 | 200.8 | 166.0 | 303.8 | 278.0 | 113.3 | 109.8 | .3 | .2 |
| Not subject to LIFO costing ---- | 1 122.2 | 1 082.6 | 614.9 | 525.0 | 550.0 | 468.9 | 172.0 | 157.1 | 16.6 | 12.6 |
| Valuation method not reported[3] ---- | 125.0 | 103.3 | 13.0 | 12.1 | 71.9 | 66.4 | 78.5 | 72.0 | 20.0 | 16.5 |
| Amount subject to LIFO reported without associated reserve and value[4] ---- | 28.2 | .6 | .3 | .3 | (Z) | (Z) | 5.4 | 5.0 | .3 | .3 |
| Detail by stage of fabrication: | | | | | | | | | | |
| Finished goods ---- | 690.4 | 709.1 | 282.6 | 285.6 | 405.1 | 389.6 | 88.7 | 88.4 | 6.0 | 4.8 |
| Work in process ---- | 853.0 | 715.0 | 494.4 | 410.6 | 455.5 | 370.1 | 150.9 | 137.5 | 23.9 | 18.1 |
| Materials and supplies ---- | 478.9 | 436.8 | 243.6 | 190.5 | 240.0 | 230.3 | 171.8 | 162.8 | 7.4 | 6.7 |

See footnotes at end of table.

## Table 3b. **Value of Inventories for the Industry: End of 1981 and 1982**—Con.

[Million dollars. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Item | Speed changers, drives, and gears (SIC 3566) | | Industrial furnaces and ovens (SIC 3567) | | Power transmission equipment, n.e.c. (SIC 3568) | | General industrial machinery, n.e.c. (SIC 3569) | |
|---|---|---|---|---|---|---|---|---|
| | End of 1981 | End of 1982 | End of 1981 | End of 1982 | End of 1981 | End of 1982 | End of 1981 | End of 1982 |
| **Total inventories**[1] | **518.1** | **454.8** | **226.0** | **209.9** | **552.2** | **512.8** | **1 154.7** | **1 077.1** |
| Detail by method of valuation: | | | | | | | | |
| Subject to LIFO costing[2] | 228.0 | 198.9 | 51.1 | 46.7 | 238.7 | 223.6 | 387.2 | 357.3 |
| LIFO reserve | 73.6 | 71.7 | 10.7 | 10.8 | 93.3 | 92.2 | 104.5 | 105.4 |
| LIFO value | 154.4 | 127.3 | 40.4 | 36.0 | 145.4 | 131.4 | 282.7 | 251.9 |
| Not subject to LIFO costing | 231.1 | 207.8 | 135.7 | 127.3 | 279.0 | 259.6 | 540.4 | 509.0 |
| Valuation method not reported[3] | 58.8 | 48.0 | 37.2 | 34.1 | 33.8 | 29.1 | 221.0 | 205.5 |
| Amount subject to LIFO reported without associated reserve and value[4] | .2 | – | 2.0 | 1.8 | .6 | .5 | 6.1 | 5.3 |
| Detail by stage of fabrication: | | | | | | | | |
| Finished goods | 168.3 | 174.8 | 39.0 | 37.6 | 253.8 | 246.5 | 357.2 | 366.6 |
| Work in process | 245.7 | 180.3 | 85.9 | 74.7 | 171.9 | 160.0 | 448.9 | 389.8 |
| Materials and supplies | 104.1 | 99.7 | 101.0 | 97.7 | 126.5 | 106.3 | 348.6 | 320.7 |

[1]Effective with the 1982 Economic Censuses, uniform instructions for reporting inventories were introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (LIFO, FIFO, market, to name a few). In 1982, all respondents were requested to report inventories at cost or market. LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve. For further explanation, see inventories in appendixes.

[2]Only includes data reported by respondents who (a) indicated amount of inventories subject to LIFO cost, and (b) provided sufficient information to determine associated LIFO reserve and value figures.

[3]Includes data estimated for nonresponse and nonmail administrative records and data reported by respondents who provided total inventory figures without other information.

[4]Includes data reported by respondents who indicated their inventories were subject to LIFO cost, but did not provide associated LIFO reserve and value figures.

## Table 3c. **Inventories by Specific Method of Valuation for the Industry: End of 1982**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Item | Pumps and pumping equipment (SIC 3561) | | Ball and roller bearings (SIC 3562) | | Air and gas compressors (SIC 3563) | | Blowers and fans (SIC 3564) | | Industrial patterns (SIC 3565) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Percent of total | Absolute standard error (percent) | Percent of total | Absolute standard error (percent) | Percent of total | Absolute standard error (percent) | Percent of total | Absolute standard error (percent) | Percent of total | Absolute standard error (percent) |
| **Total inventories** | **100.0** | **(X)** | 100.0 | (X) | **100.0** | **(X)** | **100.0** | **(X)** | **100.0** | **(X)** |
| Last-In, First-Out (LIFO) methods | 36.2 | (X) | 39.4 | (X) | 45.9 | (X) | 39.8 | (X) | 1.0 | (X) |
| Non-LIFO methods | 58.2 | (X) | 59.2 | (X) | 47.4 | (X) | 40.4 | (X) | 42.4 | (X) |
| Cost basis: | | | | | | | | | | |
| First-In, First-Out (FIFO) | 18.2 | 1.0 | 20.9 | 1.1 | 31.5 | 1.5 | 18.1 | 2.1 | 10.4 | 4.6 |
| Average cost | 5.2 | .5 | 3.5 | 1.3 | .1 | (Z) | 5.1 | .6 | (S) | (S) |
| Specific or actual cost | 5.3 | .8 | 2.0 | .8 | 6.0 | .5 | 5.6 | .9 | 21.1 | 7.7 |
| Standard cost | 28.5 | .9 | 30.5 | 1.2 | 8.5 | .7 | 10.7 | 2.3 | (S) | (S) |
| Other | .3 | .1 | 2.0 | .1 | (S) | (S) | (S) | (S) | (S) | (S) |
| Market basis: | | | | | | | | | | |
| Market lower than cost | .1 | (Z) | .3 | (Z) | (Z) | (Z) | .6 | .1 | (Z) | (Z) |
| Market always used | .6 | .1 | (Z) | (Z) | (Z) | (Z) | (Z) | (Z) | (Z) | (Z) |
| Valuation method not reported | 5.6 | (X) | 1.4 | (X) | 6.7 | (X) | 18.5 | (X) | 55.5 | (X) |
| Amount subject to LIFO reported without associated reserve and value | (Z) | (X) | (Z) | (X) | (Z) | (X) | 1.3 | (X) | 1.0 | (X) |

| Item | Speed changers, drives, and gears (SIC 3566) | | Industrial furnaces and ovens (SIC 3567) | | Power transmission equipment, n.e.c. (SIC 3568) | | General industrial machinery, n.e.c. (SIC 3569) | |
|---|---|---|---|---|---|---|---|---|
| | Percent of total | Absolute standard error (percent) | Percent of total | Absolute standard error (percent) | Percent of total | Absolute standard error (percent) | Percent of total | Absolute standard error (percent) |
| **Total inventories** | **100.0** | **(X)** | 100.0 | (X) | **100.0** | **(X)** | **100.0** | **(X)** |
| Last-In, First-Out (LIFO) methods | 43.7 | (X) | 22.3 | (X) | 43.6 | (X) | 33.2 | (X) |
| Non-LIFO methods | 45.7 | (X) | 60.7 | (X) | 50.6 | (X) | 47.3 | (X) |
| Cost basis: | | | | | | | | |
| First-In, First-Out (FIFO) | 9.0 | 1.1 | 14.6 | 2.5 | 16.9 | 2.2 | 17.7 | 1.6 |
| Average cost | 3.6 | 1.0 | 7.8 | .9 | 2.0 | .6 | 3.1 | .5 |
| Specific or actual cost | 8.4 | .6 | 16.1 | 3.5 | 3.2 | .8 | 8.7 | .8 |
| Standard cost | 23.2 | 1.0 | 20.7 | 1.9 | 25.7 | 2.3 | 15.1 | 1.2 |
| Other | 1.5 | .3 | 1.4 | .1 | 2.6 | .2 | 1.9 | .1 |
| Market basis: | | | | | | | | |
| Market lower than cost | (Z) | (Z) | (Z) | (Z) | .3 | (Z) | (S) | (S) |
| Market always used | (Z) | (Z) | (Z) | (Z) | (Z) | (Z) | (S) | (S) |
| Valuation method not reported | 10.6 | (X) | 16.2 | (X) | 5.7 | (X) | 19.1 | (X) |
| Amount subject to LIFO reported without associated reserve and value | (Z) | (X) | .9 | (X) | .1 | (X) | .5 | (X) |

Note: The percentages shown for the LIFO and non-LIFO totals and the categories "valuation method not reported" and "amount subject to LIFO reported..." are based on the census universe estimates included in table 3b. The percentages shown for the specific non-LIFO methods of valuation (e.g., FIFO, etc.) are based on a representative sample of establishments included in the annual survey of manufactures (ASM) panel for 1982 (see appendixes for description of ASM). The absolute standard error of each of the ASM estimates is shown above.

# Table 3d. Supplemental Industry Statistics Based on Sample Estimates: 1982

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Item | Pumps and pumping equipment (SIC 3561) | | Ball and roller bearings (SIC 3562) | | Air and gas compressors (SIC 3563) | | Blowers and fans (SIC 3564) | | Industrial patterns (SIC 3565) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Amount (million dollars) | Relative standard error of estimate[1] (percent) | Amount (million dollars) | Relative standard error of estimate[1] (percent) | Amount (million dollars) | Relative standard error of estimate[1] (percent) | Amount (million dollars) | Relative standard error of estimate[1] (percent) | Amount (million dollars) | Relative standard error of estimate[1] (percent) |
| Supplemental labor costs: | | | | | | | | | | |
| Total | 340.1 | 2 | 290.0 | 1 | 180.6 | 2 | 127.6 | 2 | 33.4 | 5 |
| Legal costs | 129.4 | 2 | 87.4 | 1 | 64.9 | 2 | 50.9 | 1 | 13.5 | 6 |
| Voluntary costs | 210.7 | 2 | 202.7 | 1 | 115.8 | 3 | 76.8 | 2 | 19.9 | 6 |
| Purchased services: | | | | | | | | | | |
| Cost of purchased services for the repair of— | | | | | | | | | | |
| Buildings and other structures | 7.5 | 4 | 4.5 | 6 | 5.1 | 4 | 3.3 | 15 | .5 | 55 |
| Response coverage ratio (percent)[2] | 83.3 | (X) | 91.1 | (X) | 84.7 | (X) | 69.8 | (X) | 65.4 | (X) |
| Machinery | 30.9 | 4 | 28.2 | 6 | 15.7 | 5 | 6.0 | 9 | .8 | 37 |
| Response coverage ratio (percent)[2] | 86.7 | (X) | 87.9 | (X) | 83.5 | (X) | 68.0 | (X) | 69.0 | (X) |
| Cost of purchased communication services | 25.3 | 3 | 7.6 | 3 | 12.8 | 5 | 7.6 | 6 | .8 | 40 |
| Response coverage ratio (percent)[2] | 81.7 | (X) | 89.8 | (X) | 82.3 | (X) | 62.6 | (X) | 68.8 | (X) |
| Electric energy used for heat and power: | | | | | | | | | | |
| Purchased: | | | | | | | | | | |
| Quantity (million kWh) | 1 028.1 | 3 | 1 253.3 | 1 | 462.0 | 3 | 283.7 | 1 | 61.6 | 9 |
| Cost | 54.9 | (X) | 62.4 | (X) | 23.2 | (X) | 17.5 | (X) | 4.1 | (X) |
| Generated less sold (million kWh) | (S) | (S) | – | – | – | – | – | – | – | – |
| Gross book value of depreciable assets: | | | | | | | | | | |
| Total: | | | | | | | | | | |
| Beginning of year | 1 986.7 | 1 | 2 072.6 | 3 | 849.3 | 2 | 558.6 | 6 | 129.6 | 12 |
| New capital expenditures | 210.8 | 3 | 161.7 | 5 | 107.6 | 10 | 49.0 | 8 | 8.0 | 33 |
| Used capital expenditures | 27.5 | 21 | 11.8 | 5 | 2.5 | 3 | 8.6 | 13 | 1.7 | 57 |
| Retirements | 80.7 | 9 | 36.8 | 3 | 23.2 | 5 | 23.0 | 21 | .8 | 43 |
| End of year | 2 144.4 | 1 | 2 209.3 | 2 | 936.2 | 3 | 593.2 | 6 | 138.5 | 11 |
| Buildings and other structures: | | | | | | | | | | |
| Beginning of year | 508.2 | 2 | 398.8 | 3 | 258.8 | 2 | 220.2 | 9 | 19.4 | 25 |
| New capital expenditures | 53.6 | 4 | 14.0 | 18 | 34.5 | 29 | 11.1 | 21 | .4 | 74 |
| Used capital expenditures | 7.5 | 16 | 1.6 | 7 | .3 | 1 | 2.5 | 10 | .4 | 57 |
| Retirements | 29.2 | 8 | 3.0 | 3 | 2.0 | 13 | 9.5 | 44 | .2 | 51 |
| End of year | 540.1 | 2 | 411.4 | 3 | 290.8 | 5 | 224.3 | 7 | 20.1 | 24 |
| Machinery and equipment: | | | | | | | | | | |
| Beginning of year | 1 478.5 | 2 | 1 673.8 | 3 | 590.5 | 2 | 338.4 | 5 | 110.2 | 13 |
| New capital expenditures | 157.2 | 3 | 147.7 | 4 | 73.1 | 2 | 37.9 | 7 | 7.6 | 33 |
| Automobiles, trucks, etc., for highway use | 2.6 | 7 | 1.9 | 1 | 1.2 | 1 | 1.3 | 12 | 1.4 | 58 |
| Computers and peripheral data processing equipment | 7.6 | 7 | 3.0 | 8 | 3.1 | 13 | 2.2 | 16 | 1.1 | 84 |
| All other | 121.2 | 2 | 125.8 | 3 | 40.7 | 1 | 25.6 | 8 | 2.7 | 39 |
| New machinery and equipment, n.s.k.[3] | 25.8 | (S) | 17.0 | (S) | 28.1 | (S) | 8.8 | (S) | 2.4 | (S) |
| Used capital expenditures | 20.1 | 26 | 10.2 | 6 | 2.2 | 3 | 6.1 | 14 | 1.3 | 58 |
| Retirements | 51.5 | 10 | 33.7 | 3 | 21.2 | 4 | 13.5 | 11 | .7 | 46 |
| End of year | 1 604.3 | 2 | 1 797.9 | 3 | 645.4 | 2 | 368.9 | 5 | 118.4 | 12 |
| Rental payments: | | | | | | | | | | |
| Total | 50.3 | 13 | 11.0 | 4 | 22.1 | 5 | 18.0 | 13 | 6.1 | 37 |
| Buildings and other structures | 12.6 | 13 | 1.6 | 17 | 5.9 | 12 | 10.3 | 22 | 5.2 | 42 |
| Machinery and equipment | 37.7 | 13 | 9.4 | 3 | 16.2 | 4 | 7.7 | 6 | .9 | 63 |
| Depreciation charges during 1982: | | | | | | | | | | |
| Total | 176.6 | 2 | 135.9 | 3 | 63.8 | 11 | 44.5 | 8 | 20.6 | 19 |
| Buildings and other structures | 24.4 | 3 | 14.8 | 3 | 14.4 | 22 | 10.8 | 11 | 1.4 | 21 |
| Machinery and equipment | 152.2 | 2 | 121.1 | 3 | 49.5 | 8 | 33.7 | 7 | 19.1 | 21 |

| Item | Speed changers, drives, and gears (SIC 3566) | | Industrial furnaces and ovens (SIC 3567) | | Power transmission equipment, n.e.c. (SIC 3568) | | General industrial machinery, n.e.c. (SIC 3569) | |
|---|---|---|---|---|---|---|---|---|
| | Amount (million dollars) | Relative standard error of estimate[1] (percent) | Amount (million dollars) | Relative standard error of estimate[1] (percent) | Amount (million dollars) | Relative standard error of estimate[1] (percent) | Amount (million dollars) | Relative standard error of estimate[1] (percent) |
| Supplemental labor costs: | | | | | | | | |
| Total | 122.7 | 2 | 81.0 | 2 | 162.2 | 3 | 262.7 | 2 |
| Legal costs | 43.1 | 2 | 29.6 | 2 | 51.1 | 3 | 103.4 | 2 |
| Voluntary costs | 79.7 | 2 | 51.4 | 3 | 111.2 | 4 | 159.3 | 2 |
| Purchased services: | | | | | | | | |
| Cost of purchased services for the repair of— | | | | | | | | |
| Buildings and other structures | 4.7 | 15 | 1.3 | 10 | 4.2 | 10 | 5.5 | 7 |
| Response coverage ratio (percent)[2] | 84.9 | (X) | 79.3 | (X) | 81.1 | (X) | 69.3 | (X) |
| Machinery | 17.4 | 4 | 2.2 | 9 | 17.8 | 7 | 11.6 | 5 |
| Response coverage ratio (percent)[2] | 86.0 | (X) | 78.4 | (X) | 89.3 | (X) | 71.5 | (X) |
| Cost of purchased communication services | 6.7 | 6 | 5.1 | 8 | 8.4 | 12 | 19.0 | 6 |
| Response coverage ratio (percent)[2] | 79.5 | (X) | 79.9 | (X) | 84.6 | (X) | 73.2 | (X) |
| Electric energy used for heat and power: | | | | | | | | |
| Purchased: | | | | | | | | |
| Quantity (million kWh) | 343.6 | 2 | 153.6 | 1 | 521.3 | 1 | 640.5 | 1 |
| Cost | 19.0 | (X) | 9.0 | (X) | 26.0 | (X) | 39.4 | (X) |
| Generated less sold (million kWh) | (S) | (S) | – | – | (S) | (S) | 11.9 | – |
| Gross book value of depreciable assets: | | | | | | | | |
| Total: | | | | | | | | |
| Beginning of year | 813.7 | 3 | 238.4 | 3 | 666.8 | 4 | 1 227.2 | 3 |
| New capital expenditures | 86.2 | 5 | 17.2 | 12 | 62.7 | 6 | 111.6 | 7 |
| Used capital expenditures | 8.7 | 13 | .4 | 55 | 8.7 | 15 | 13.2 | 4 |
| Retirements | 13.8 | 9 | 7.6 | 13 | 23.5 | 10 | 43.0 | 7 |
| End of year | 894.9 | 3 | 248.5 | 3 | 714.7 | 4 | 1 308.9 | 3 |

See footnotes at end of table.

## Table 3d. Supplemental Industry Statistics Based on Sample Estimates: 1982—Con.

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Item | Speed changers, drives, and gears (SIC 3566) | | Industrial furnaces and ovens (SIC 3567) | | Power transmission equipment, n.e.c. (SIC 3568) | | General industrial machinery, n.e.c. (SIC 3569) | |
|---|---|---|---|---|---|---|---|---|
| | Amount (million dollars) | Relative standard error of estimate[1] (percent) | Amount (million dollars) | Relative standard error of estimate[1] (percent) | Amount (million dollars) | Relative standard error of estimate[1] (percent) | Amount (million dollars) | Relative standard error of estimate[1] (percent) |
| Gross book value of depreciable assets—Con. | | | | | | | | |
| Buildings and other structures: | | | | | | | | |
| Beginning of year | 155.6 | 4 | 98.3 | 5 | 154.5 | 6 | 408.5 | 3 |
| New capital expenditures | 10.9 | 7 | 4.2 | 28 | 10.2 | 18 | 27.5 | 5 |
| Used capital expenditures | .1 | 35 | (Z) | 1 | 3.6 | 24 | 1.1 | 35 |
| Retirements | 1.0 | 13 | 3.1 | 27 | 2.7 | 3 | 12.0 | 12 |
| End of year | 165.6 | 4 | 99.4 | 5 | 165.5 | 6 | 425.1 | 3 |
| Machinery and equipment: | | | | | | | | |
| Beginning of year | 658.1 | 3 | 140.1 | 3 | 512.4 | 4 | 818.6 | 3 |
| New capital expenditures | 75.4 | 6 | 13.0 | 10 | 52.4 | 5 | 84.1 | 8 |
| Automobiles, trucks, etc., for highway use | 4.7 | 69 | 1.2 | 38 | .7 | 11 | 3.3 | 38 |
| Computers and peripheral data processing equipment | 2.6 | 15 | .8 | 10 | 3.1 | 16 | 7.4 | 13 |
| All other | 64.7 | 3 | 9.3 | 10 | 46.2 | 5 | 54.8 | 5 |
| New machinery and equipment, n.s.k.[3] | 3.4 | 35 | 1.8 | 45 | 2.4 | 24 | 18.7 | 31 |
| Used capital expenditures | 8.6 | 13 | .4 | 58 | 5.1 | 19 | 12.1 | 3 |
| Retirements | 12.9 | 9 | 4.5 | 10 | 20.8 | 11 | 31.0 | 7 |
| End of year | 729.3 | 3 | 149.1 | 3 | 549.1 | 4 | 883.8 | 3 |
| Rental payments: | | | | | | | | |
| Total | 16.7 | 10 | 8.3 | 7 | 18.5 | 13 | 36.3 | 6 |
| Buildings and other structures | 5.3 | 17 | 4.5 | 13 | 6.2 | 28 | 18.3 | 9 |
| Machinery and equipment | 11.4 | 11 | 3.7 | 7 | 12.3 | 10 | 18.0 | 6 |
| Depreciation charges during 1982: | | | | | | | | |
| Total | 67.8 | 3 | 17.3 | 3 | 48.9 | 4 | 94.6 | 3 |
| Buildings and other structures | 8.7 | 3 | 4.4 | 5 | 6.9 | 6 | 17.7 | 4 |
| Machinery and equipment | 59.1 | 3 | 13.0 | 4 | 42.0 | 4 | 76.9 | 3 |

Note: Data for total new capital expenditures, new building expenditures, new machinery expenditures, and total used expenditures are also shown in table 3a. Data in table 3a are census universe totals and may differ from annual survey of manufactures (ASM) sample estimates shown in this table. Data in this table represent best estimates of year-to-year change as measured by the continuing ASM sample. However, they are subject to sampling error and, hence, as estimates of level, are not as reliable as universe figures shown in table 3a.

[1]For description of relative standard error of estimate, see Qualifications of the Data in appendixes.

[2]Measure of extent to which respondents reported each item. Derived for each item by calculating the ratio of weighted employment for those sample establishments that reported the specific inquiry to weighted total employment for all sample establishments classified in industry. (See appendixes for explanation of sample weight.)

[3]Represents total machinery and equipment expenditures for establishments that did not break down their expenditures by specific type.

## Table 4. Industry Statistics by Employment Size of Establishment: 1982

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Industry and employment size class | E[1] | All establishments (no.) | All employees | | Production workers | | | Value added by manufacture (million dollars) | Cost of materials (million dollars) | Value of shipments (million dollars) | New capital expenditures (million dollars) | End-of-year inventories (million dollars) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Number (1,000) | Payroll (million dollars) | Number (1,000) | Hours (millions) | Wages (million dollars) | | | | | |
| **INDUSTRY 3561, PUMPS AND PUMPING EQUIPMENT** | | | | | | | | | | | | |
| **Total** | - | 626 | 68.5 | 1 484.7 | 39.1 | 74.7 | 772.0 | 3 336.8 | 2 742.4 | 6 198.3 | 227.5 | 1 861.0 |
| Establishments with an average of— | | | | | | | | | | | | |
| 1 to 4 employees | E8 | 120 | .3 | 4.0 | .2 | .3 | 2.5 | 9.3 | 8.0 | 17.6 | .4 | 5.6 |
| 5 to 9 employees | E6 | 90 | .6 | 10.8 | .4 | .8 | 6.6 | 23.1 | 24.7 | 48.5 | 1.3 | 13.6 |
| 10 to 19 employees | E4 | 91 | 1.2 | 22.1 | .8 | 1.6 | 12.2 | 50.6 | 48.1 | 101.1 | 4.2 | 23.8 |
| 20 to 49 employees | E2 | 103 | 3.4 | 66.0 | 2.2 | 4.2 | 36.0 | 156.3 | 140.5 | 307.5 | 8.0 | 69.5 |
| 50 to 99 employees | - | 65 | 4.4 | 86.0 | 2.6 | 5.2 | 45.1 | 201.2 | 205.0 | 419.9 | 10.2 | 107.1 |
| 100 to 249 employees | - | 73 | 11.6 | 232.0 | 6.8 | 13.3 | 121.4 | 555.0 | 488.6 | 1 072.5 | 37.7 | 293.3 |
| 250 to 499 employees | - | 52 | 18.7 | 416.8 | 10.4 | 19.8 | 206.5 | 934.1 | 735.5 | 1 704.9 | 57.1 | 454.0 |
| 500 to 999 employees | - | 23 | 15.8 | 377.8 | 9.2 | 17.2 | 199.2 | 792.7 | 630.9 | 1 467.2 | 65.4 | 487.1 |
| 1,000 to 2,499 employees | - | 9 | 12.5 | 269.2 | 6.7 | 12.3 | 142.5 | 614.5 | 461.1 | 1 059.2 | 43.1 | 407.0 |
| Covered by administrative records[2] | E9 | 162 | .9 | 14.0 | .6 | 1.1 | 7.9 | 33.2 | 27.9 | 62.2 | 1.7 | 17.0 |
| **INDUSTRY 3562, BALL AND ROLLER BEARINGS** | | | | | | | | | | | | |
| **Total** | - | 161 | 43.7 | 907.0 | 33.5 | 62.6 | 645.9 | 1 839.2 | 1 215.8 | 3 135.8 | 164.5 | 886.6 |
| Establishments with an average of— | | | | | | | | | | | | |
| 1 to 4 employees | E9 | 15 | (Z) | .4 | (Z) | (Z) | .4 | .8 | .8 | 1.7 | (Z) | .4 |
| 5 to 9 employees | E5 | 14 | .1 | 1.5 | .1 | .2 | 1.1 | 2.7 | 2.5 | 5.3 | .4 | 1.9 |
| 10 to 19 employees | E5 | 17 | .2 | 4.5 | .2 | .3 | 2.9 | 11.4 | 10.6 | 21.6 | .5 | 5.5 |
| 20 to 49 employees | E2 | 15 | .5 | 7.6 | .4 | .7 | 5.6 | 18.6 | 11.6 | 30.2 | 1.9 | 7.0 |
| 50 to 99 employees | - | 21 | 1.5 | 29.1 | 1.1 | 2.2 | 19.4 | 73.3 | 50.8 | 123.5 | 4.4 | 28.5 |
| 100 to 249 employees | - | 27 | 4.8 | 84.4 | 3.8 | 6.9 | 60.2 | 227.6 | 156.3 | 384.6 | 16.1 | 96.1 |
| 250 to 499 employees | - | 25 | 9.2 | 173.8 | 6.8 | 13.4 | 119.1 | 361.2 | 259.9 | 636.8 | 62.1 | 209.4 |
| 500 to 999 employees | - | 20 | 13.8 | 272.6 | 10.7 | 20.3 | 197.6 | 631.6 | 376.2 | 1 019.7 | 49.1 | 321.9 |
| 1,000 to 2,499 employees | - | 5 | 13.6 | 333.2 | 10.5 | 18.6 | 239.7 | 512.0 | 347.0 | 912.3 | 30.0 | 215.8 |
| 2,500 employees or more | - | 2 | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) |
| Covered by administrative records[2] | E9 | 29 | .3 | 4.3 | .2 | .4 | 3.2 | 9.1 | 6.7 | 16.1 | .6 | 4.1 |

See footnotes at end of table.

## Table 4. Industry Statistics by Employment Size of Establishment: 1982—Con.

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Industry and employment size class | E[1] | All establishments (no.) | All employees | | Production workers | | | Value added by manufacture (million dollars) | Cost of materials (million dollars) | Value of shipments (million dollars) | New capital expenditures (million dollars) | End-of-year inventories (million dollars) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Number (1,000) | Payroll (million dollars) | Number (1,000) | Hours (millions) | Wages (million dollars) | | | | | |
| **INDUSTRY 3563, AIR AND GAS COMPRESSORS** | | | | | | | | | | | | |
| **Total** | - | 282 | 32.1 | 709.3 | 17.5 | 34.1 | 344.0 | 1 470.6 | 1 698.3 | 3 270.0 | 118.1 | 990.0 |
| Establishments with an average of— | | | | | | | | | | | | |
| 1 to 4 employees | E9 | 48 | .1 | 1.7 | .1 | .1 | 1.0 | 3.9 | 4.4 | 8.5 | .2 | 2.8 |
| 5 to 9 employees | E7 | 44 | .3 | 5.4 | .2 | .3 | 3.0 | 11.1 | 11.6 | 22.7 | .6 | 7.1 |
| 10 to 19 employees | E5 | 46 | .7 | 12.3 | .4 | .8 | 6.7 | 28.0 | 25.6 | 54.6 | 2.8 | 14.7 |
| 20 to 49 employees | E1 | 57 | 1.8 | 36.5 | 1.2 | 2.3 | 20.3 | 83.5 | 81.8 | 165.2 | 5.7 | 40.2 |
| 50 to 99 employees | - | 27 | 2.0 | 40.8 | 1.3 | 2.4 | 21.8 | 86.2 | 99.8 | 184.9 | 15.8 | 56.0 |
| 100 to 249 employees | - | 28 | 4.6 | 86.2 | 2.7 | 5.3 | 45.6 | 190.7 | 282.9 | 482.8 | 11.3 | 140.2 |
| 250 to 499 employees | - | 14 | 5.3 | 125.2 | 2.7 | 5.4 | 55.7 | 268.0 | 342.6 | 613.5 | 29.5 | 150.2 |
| 500 to 999 employees | - | 11 | 7.6 | 159.1 | 4.0 | 7.2 | 72.6 | 340.2 | 438.1 | 804.8 | 22.8 | 232.5 |
| 1,000 to 2,499 employees | - | 7 | 9.7 | 242.1 | 5.0 | 10.3 | 117.2 | 459.0 | 411.7 | 932.9 | 29.4 | 346.4 |
| Covered by administrative records[2] | E9 | 76 | .6 | 8.8 | .3 | .6 | 4.6 | 18.1 | 19.7 | 38.8 | 1.2 | 12.5 |
| **INDUSTRY 3564, BLOWERS AND FANS** | | | | | | | | | | | | |
| **Total** | - | 502 | 29.8 | 553.6 | 19.1 | 37.2 | 306.0 | 1 160.0 | 999.8 | 2 173.5 | 57.1 | 388.7 |
| Establishments with an average of— | | | | | | | | | | | | |
| 1 to 4 employees | E9 | 89 | .2 | 2.5 | .1 | .2 | 1.6 | 6.9 | 5.4 | 12.4 | .3 | 2.4 |
| 5 to 9 employees | E7 | 81 | .5 | 9.3 | .4 | .8 | 5.6 | 22.0 | 17.5 | 39.8 | .6 | 6.4 |
| 10 to 19 employees | E5 | 92 | 1.2 | 20.2 | .8 | 1.6 | 11.6 | 38.1 | 34.9 | 74.1 | 1.9 | 11.4 |
| 20 to 49 employees | E1 | 99 | 3.2 | 54.8 | 2.2 | 4.2 | 31.5 | 126.5 | 104.0 | 232.5 | 4.0 | 33.9 |
| 50 to 99 employees | - | 62 | 4.6 | 80.7 | 3.1 | 5.9 | 46.2 | 159.3 | 163.7 | 329.8 | 6.4 | 60.8 |
| 100 to 249 employees | - | 50 | 7.8 | 140.1 | 5.1 | 9.2 | 79.8 | 300.3 | 281.9 | 584.2 | 20.2 | 118.0 |
| 250 to 499 employees | - | 25 | 8.7 | 167.1 | 5.6 | 11.5 | 96.1 | 321.8 | 306.2 | 630.4 | 16.3 | 108.1 |
| 500 to 999 employees | - | 2 | 3.6 | 78.7 | 1.9 | 3.7 | 33.5 | 185.2 | 86.2 | 270.3 | 7.4 | 47.6 |
| 1,000 to 2,499 employees | - | 2 | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) |
| Covered by administrative records[2] | E9 | 154 | .9 | 12.2 | .6 | 1.2 | 7.1 | 26.6 | 20.8 | 47.9 | .9 | 9.1 |
| **INDUSTRY 3565, INDUSTRIAL PATTERNS** | | | | | | | | | | | | |
| **Total** | E1 | 996 | 9.8 | 217.6 | 8.1 | 14.8 | 173.4 | 347.6 | 97.6 | 452.3 | 15.8 | 29.6 |
| Establishments with an average of— | | | | | | | | | | | | |
| 1 to 4 employees | E7 | 346 | .8 | 13.8 | .6 | 1.2 | 12.0 | 24.5 | 6.6 | 31.2 | 1.1 | 2.0 |
| 5 to 9 employees | E2 | 306 | 2.1 | 40.8 | 1.7 | 3.0 | 33.1 | 65.7 | 18.4 | 84.2 | 3.0 | 4.5 |
| 10 to 19 employees | E1 | 239 | 3.2 | 68.4 | 2.6 | 4.5 | 54.0 | 106.4 | 27.5 | 135.2 | 5.0 | 8.0 |
| 20 to 49 employees | - | 84 | 2.3 | 56.3 | 1.9 | 3.6 | 43.8 | 87.9 | 26.2 | 117.2 | 3.7 | 8.5 |
| 50 to 99 employees | - | 18 | 1.1 | 30.0 | 1.0 | 2.0 | 24.3 | 47.9 | 11.1 | 60.7 | 1.8 | 4.8 |
| 100 to 249 employees | - | 3 | .3 | 8.2 | .3 | .4 | 6.2 | 15.3 | 7.8 | 23.7 | 1.1 | 1.7 |
| Covered by administrative records[2] | E9 | 332 | 1.0 | 14.3 | .8 | 1.6 | 12.0 | 25.7 | 6.6 | 32.4 | 1.2 | 1.7 |
| **INDUSTRY 3566, SPEED CHANGERS, DRIVES, AND GEARS** | | | | | | | | | | | | |
| **Total** | - | 307 | 23.8 | 499.4 | 15.7 | 29.4 | 295.7 | 1 011.0 | 551.1 | 1 621.3 | 90.9 | 454.8 |
| Establishments with an average of— | | | | | | | | | | | | |
| 1 to 4 employees | E9 | 38 | .1 | 1.2 | .1 | .1 | .8 | 2.1 | 1.6 | 4.2 | .2 | 2.8 |
| 5 to 9 employees | E6 | 38 | .3 | 4.9 | .2 | .4 | 3.2 | 9.8 | 5.9 | 15.9 | .6 | 3.5 |
| 10 to 19 employees | E4 | 53 | .7 | 13.3 | .5 | 1.0 | 7.9 | 24.1 | 15.4 | 40.6 | 2.5 | 8.7 |
| 20 to 49 employees | - | 76 | 2.5 | 48.8 | 1.8 | 3.5 | 30.0 | 90.2 | 53.5 | 145.2 | 5.3 | 23.4 |
| 50 to 99 employees | - | 44 | 3.0 | 61.1 | 2.1 | 4.0 | 37.1 | 116.7 | 73.5 | 198.4 | 8.3 | 39.7 |
| 100 to 249 employees | - | 37 | 5.7 | 120.6 | 3.7 | 6.9 | 71.1 | 237.6 | 140.1 | 382.6 | 22.1 | 124.3 |
| 250 to 499 employees | - | 14 | 4.3 | 87.5 | 2.6 | 4.8 | 48.0 | 200.9 | 106.1 | 317.9 | 11.1 | 77.9 |
| 500 to 999 employees | - | 6 | 7.2 | 161.9 | 4.7 | 8.8 | 97.5 | 329.5 | 155.1 | 516.3 | 40.8 | 174.5 |
| 2,500 employees or more | - | 1 | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) |
| Covered by administrative records[2] | E9 | 80 | .5 | 8.2 | .3 | .7 | 5.0 | 16.0 | 10.1 | 27.1 | 1.4 | 9.3 |
| **INDUSTRY 3567, INDUSTRIAL FURNACES AND OVENS** | | | | | | | | | | | | |
| **Total** | - | 354 | 16.5 | 323.3 | 9.4 | 18.3 | 154.1 | 646.2 | 471.6 | 1 130.6 | 21.9 | 209.9 |
| Establishments with an average of— | | | | | | | | | | | | |
| 1 to 4 employees | E9 | 59 | .1 | 1.8 | .1 | .1 | 1.0 | 3.9 | 2.9 | 6.9 | .1 | 1.1 |
| 5 to 9 employees | E7 | 56 | .4 | 6.1 | .2 | .5 | 3.5 | 13.0 | 9.7 | 22.7 | .3 | 3.2 |
| 10 to 19 employees | E3 | 66 | .9 | 17.0 | .5 | 1.0 | 8.9 | 29.4 | 23.9 | 54.5 | .9 | 8.9 |
| 20 to 49 employees | E1 | 100 | 3.2 | 61.0 | 1.9 | 3.6 | 29.4 | 114.1 | 93.1 | 209.9 | 4.3 | 38.5 |
| 50 to 99 employees | - | 33 | 2.4 | 46.8 | 1.3 | 2.6 | 21.8 | 102.9 | 66.4 | 168.6 | 3.7 | 26.9 |
| 100 to 249 employees | - | 25 | 4.2 | 80.5 | 2.2 | 4.4 | 38.8 | 144.1 | 121.6 | 270.9 | 5.7 | 56.2 |
| 250 to 499 employees | - | 14 | 5.5 | 110.3 | 3.1 | 6.1 | 50.9 | 238.7 | 154.0 | 397.0 | 6.9 | 75.1 |
| 500 to 999 employees | - | 1 | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) |
| Covered by administrative records[2] | E9 | 102 | .6 | 8.1 | .3 | .8 | 4.1 | 17.2 | 12.5 | 30.0 | .4 | 4.9 |
| **INDUSTRY 3568, POWER TRANSMISSION EQUIPMENT, N.E.C.** | | | | | | | | | | | | |
| **Total** | - | 294 | 27.1 | 556.4 | 18.1 | 33.3 | 337.2 | 1 153.9 | 767.4 | 1 940.5 | 75.0 | 512.8 |
| Establishments with an average of— | | | | | | | | | | | | |
| 1 to 4 employees | E8 | 28 | .1 | 1.0 | .1 | .1 | .7 | 2.3 | 1.6 | 4.0 | .1 | 1.2 |
| 5 to 9 employees | E5 | 25 | .2 | 3.3 | .1 | .2 | 1.9 | 6.6 | 4.4 | 11.0 | .3 | 2.9 |
| 10 to 19 employees | E4 | 46 | .7 | 11.5 | .5 | .9 | 7.6 | 23.0 | 17.5 | 42.4 | 1.7 | 10.4 |
| 20 to 49 employees | E1 | 82 | 2.7 | 49.9 | 1.9 | 3.7 | 29.6 | 113.3 | 86.9 | 195.5 | 7.4 | 56.5 |
| 50 to 99 employees | - | 47 | 3.3 | 62.4 | 2.2 | 4.3 | 37.5 | 132.8 | 83.0 | 218.0 | 12.3 | 57.6 |
| 100 to 249 employees | - | 38 | 5.9 | 117.2 | 3.9 | 7.3 | 69.9 | 240.4 | 162.9 | 411.2 | 12.0 | 108.5 |
| 250 to 499 employees | - | 18 | 6.3 | 143.3 | 4.4 | 8.4 | 94.8 | 298.8 | 181.0 | 485.3 | 18.4 | 127.5 |
| 500 to 999 employees | - | 7 | 4.8 | 105.1 | 2.9 | 4.8 | 56.7 | 224.0 | 141.8 | 373.8 | 16.4 | 101.4 |
| 1,000 to 2,499 employees | - | 3 | 3.1 | 62.7 | 2.1 | 3.7 | 38.4 | 112.9 | 88.3 | 199.3 | 6.6 | 46.9 |
| Covered by administrative records[2] | E9 | 59 | .5 | 7.3 | .4 | .7 | 4.8 | 14.3 | 9.9 | 24.6 | .7 | 6.3 |

See footnotes at end of table.

## Table 4. Industry Statistics by Employment Size of Establishment: 1982—Con.

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Industry and employment size class | E[1] | All establishments (no.) | All employees | | Production workers | | | Value added by manufacture (million dollars) | Cost of materials (million dollars) | Value of shipments (million dollars) | New capital expenditures (million dollars) | End-of-year inventories (million dollars) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Number (1,000) | Payroll (million dollars) | Number (1,000) | Hours (millions) | Wages (million dollars) | | | | | |
| **INDUSTRY 3569, GENERAL INDUSTRIAL MACHINERY, N.E.C.** | | | | | | | | | | | | |
| **Total** | E1 | 1 460 | 63.1 | 1 256.0 | 37.4 | 73.7 | 621.4 | 2 623.9 | 1 893.0 | 4 566.5 | 132.3 | 1 077.1 |
| Establishments with an average of— | | | | | | | | | | | | |
| 1 to 4 employees | E8 | 308 | .7 | 12.0 | .5 | .9 | 7.2 | 26.6 | 22.2 | 49.6 | .7 | 10.9 |
| 5 to 9 employees | E6 | 290 | 2.0 | 33.7 | 1.3 | 2.6 | 18.7 | 69.5 | 51.4 | 121.8 | 2.5 | 22.6 |
| 10 to 19 employees | E3 | 297 | 4.1 | 74.2 | 2.7 | 5.2 | 40.5 | 149.2 | 124.4 | 275.6 | 5.3 | 47.6 |
| 20 to 49 employees | E2 | 267 | 8.3 | 163.7 | 5.4 | 10.5 | 84.2 | 337.7 | 273.9 | 614.7 | 12.0 | 124.7 |
| 50 to 99 employees | E1 | 145 | 10.2 | 197.8 | 6.3 | 12.6 | 100.0 | 413.8 | 326.9 | 749.3 | 25.0 | 153.2 |
| 100 to 249 employees | - | 109 | 16.5 | 320.5 | 9.4 | 18.7 | 154.6 | 740.4 | 552.2 | 1 311.9 | 38.5 | 280.8 |
| 250 to 499 employees | - | 26 | 8.4 | 169.5 | 4.9 | 10.6 | 81.5 | 330.3 | 255.5 | 595.0 | 20.4 | 154.8 |
| 500 to 999 employees | - | 15 | 9.7 | 208.2 | 5.6 | 10.4 | 106.3 | 404.0 | 232.9 | 642.2 | 18.4 | 222.7 |
| 1,000 to 2,499 employees | - | 3 | 3.3 | 76.5 | 1.3 | 2.3 | 28.3 | 152.3 | 53.6 | 206.3 | 9.5 | 59.8 |
| Covered by administrative records[2] | E9 | 385 | 1.8 | 22.9 | 1.2 | 2.3 | 12.3 | 48.1 | 38.3 | 87.5 | 1.0 | 19.2 |

Note: For qualifications of data, see footnotes on table 1a. Data shown as a (D) are included in underscored figures above.

[1]Payroll end seles data for some small single-unit companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry avereges to estimate the items shown for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at time dete were tabulated. The following symbols are shown for those States where estimated data based on administrative records data account for 10 percent or more of figures shown: E1—10 to 19 percent; E2—20 to 29 percent; E3—30 to 39 percent; E4—40 to 49 percent; E5—50 to 59 percent; E6—60 to 69 percent; E7—70 to 79 percent; E8—80 to 89 percent; E9—90 percent or more.

[2]Report forms were not mailed to small single-unit companies with up to 20 employees (cutoff varied by industry). Payroll and sales data for 1982 were obtained from administretive records supplied by other agencies of the Federal Government. Those data were then used in conjunction with industry averages to estimate the items shown. Data are also included in respective size classes shown.

## Table 5a. Industry Statistics by Industry and Primary Product Class Specialization: 1982

[Table presents selected statistics for establishments according to their degree of specialization in products primary to their industry. Measures of plant specialization shown are (1) industry specializetion: retio of primary product shipments to total product shipments (primery plus secondary, excluding miscellaneous receipts) for the establishment; and (2) product class specialization: ratio of largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment. See appendix for method of computing retios. Statistics for establishments with specialization ratios of less than 75 percent ere included in total lines but are not shown as a separate class. In addition, data may not be shown for various reesons; e.g., to avoid disclosing data for individual companies. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see eppendixes.]

| Industry or product class code | Industry or product cless by percent of specializetion | All establishments (number) | All employees | | Production workers | | | Value added by manufacture (million dollars) | Cost of materials (million dollars) | Value of shipments (million dollars) | New capital expenditures (million dollars) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Number (1,000) | Payroll (million dollars) | Number (1,000) | Hours (millions) | Wages (million dollars) | | | | |
| 3561 | **Pumps and pumping equipment:** | | | | | | | | | | |
| | Entire industry | 626 | 68.5 | 1 484.7 | 39.1 | 74.7 | 772.0 | 3 336.8 | 2 742.4 | 6 198.3 | 227.5 |
| | Establishments with 75 percent specializetion or more | 574 | 53.3 | 1 150.9 | 30.4 | 58.0 | 584.0 | 2 667.0 | 2 162.2 | 4 938.1 | 184.9 |
| 35611 | Industrial pumps, except fluid power pumps: | | | | | | | | | | |
| | Esteblishments with this product class primary | 154 | 25.9 | 571.1 | 14.2 | 27.6 | 280.7 | 1 282.0 | 1 007.4 | 2 352.2 | 82.1 |
| | Establishments with 75 percent specialization or more in class | 78 | 7.4 | 155.9 | 4.3 | 8.6 | 78.4 | 347.4 | 347.0 | 729.4 | 38.1 |
| 35613 | Domestic water systems: | | | | | | | | | | |
| | Establishments with this product class primary | 19 | 2.7 | 50.3 | 1.6 | 3.2 | 26.5 | 127.2 | 167.9 | 298.9 | 4.8 |
| | Establishments with 75 percent specialization or more in class | 6 | .2 | 2.5 | .1 | .2 | 1.2 | 1.3 | 8.3 | 12.4 | .1 |
| 35615 | Pumps, n.e.c.: | | | | | | | | | | |
| | Establishments with this product class primary | 67 | 12.2 | 264.0 | 7.3 | 13.2 | 145.1 | 616.7 | 694.7 | 1 321.6 | 57.0 |
| | Establishments with 75 percent specialization or more in class | 35 | 2.3 | 53.2 | 1.5 | 2.7 | 27.0 | 113.0 | 134.4 | 240.2 | 28.3 |
| 35617 | Fluid power pumps, except aerospace: | | | | | | | | | | |
| | Establishments with this product class primary | 55 | 10.9 | 229.5 | 6.3 | 11.6 | 125.6 | 461.0 | 297.7 | 784.2 | 28.3 |
| | Establishments with 75 percent specialization or more in class | 39 | 4.3 | 91.7 | 2.5 | 4.9 | 48.1 | 209.9 | 113.0 | 334.0 | 12.4 |
| 35618 | Aerospace fluid power pumps: | | | | | | | | | | |
| | Esteblishments with this product class primary | 6 | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) |
| | Establishments with 75 percent specielization or more in cless | 2 | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) |
| 3561A | Parts for fluid power pumps, except aerospace: | | | | | | | | | | |
| | Establishments with this product class primary | 12 | 1.8 | 43.8 | .8 | 1.4 | 17.2 | 84.2 | 73.1 | 157.4 | 8.7 |
| | Establishments with 75 percent specialization or more in class | 6 | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) |
| 3561B | Perts for aerospece fluid power pumps: | | | | | | | | | | |
| | Establishments with this product class primery | 2 | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) |
| | Establishments with 75 percent specializetion or more in class | - | - | - | - | - | - | - | - | - | - |
| 3561C | Parts for pumps, except fluid power: | | | | | | | | | | |
| | Establishments with this product class primery | 61 | 9.7 | 225.2 | 5.7 | 11.0 | 118.9 | 543.5 | 346.2 | 904.6 | 34.2 |
| | Establishments with 75 percent specialization or more in cless | 35 | 3.4 | 78.8 | 2.2 | 4.0 | 48.0 | 209.3 | 110.3 | 326.8 | 9.4 |
| 3562 | **Bell and roller bearings:** | | | | | | | | | | |
| | Entire industry | 161 | 43.7 | 907.0 | 33.5 | 62.6 | 645.9 | 1 839.2 | 1 215.8 | 3 135.8 | 164.5 |
| | Establishments with 75 percent specialization or more | 150 | 42.0 | 873.0 | 32.3 | 60.3 | 622.9 | 1 747.8 | 1 138.6 | 2 964.2 | 153.1 |
| 35621 | Bell bearings, unmounted: | | | | | | | | | | |
| | Establishments with this product cless primary | 51 | 18.7 | 390.4 | 14.4 | 27.1 | 279.7 | 767.7 | 407.9 | 1 218.9 | 56.0 |
| | Establishments with 75 percent specialization or more in class | 38 | 15.7 | 333.9 | 12.0 | 22.8 | 238.1 | 588.5 | 332.8 | 966.3 | 47.2 |
| 35622 | Tepered roller bearings, unmounted: | | | | | | | | | | |
| | Establishments with this product class primery | 12 | 9.3 | 228.4 | 7.6 | 14.1 | 163.2 | 365.0 | 409.9 | 788.2 | (D) |
| | Establishments with 75 percent specializetion or more in cless | 9 | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) |

See footnotes et end of table.

# Table 5a. Industry Statistics by Industry and Primary Product Class Specialization: 1982—Con.

[Table presents selected statistics for establishments according to their degree of specialization in products primary to their industry. Measures of plant specialization shown are (1) industry specialization: ratio of primary product shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment; and (2) product class specialization: ratio of largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment. See appendix for method of computing ratios. Statistics for establishments with specialization ratios of less than 75 percent are included in total lines but are not shown as a separate class. In addition, data may not be shown for various reasons; e.g., to avoid disclosing data for individual companies. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes.]

| Industry or product class code | Industry or product class by percent of specialization | All establishments (number) | All employees | | Production workers | | | Value added by manufacture (million dollars) | Cost of materials (million dollars) | Value of shipments (million dollars) | New capital expenditures (million dollars) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Number (1,000) | Payroll (million dollars) | Number (1,000) | Hours (millions) | Wages (million dollars) | | | | |
| **3562** | **Ball and roller bearings—Con.** | | | | | | | | | | |
| 35623 | Roller bearings, except tapered, unmounted: | | | | | | | | | | |
| | Establishments with this product class primary | 28 | 9.9 | 175.1 | 7.2 | 13.4 | 122.4 | 437.4 | 202.7 | 654.7 | 35.3 |
| | Establishments with 75 percent specialization or more in class | 19 | 5.9 | 104.0 | 4.4 | 8.0 | 73.0 | 251.4 | 124.9 | 380.5 | 27.6 |
| 35624 | Mounted bearings, except plain: | | | | | | | | | | |
| | Establishments with this product class primary | 12 | 3.6 | 73.9 | 2.7 | 4.8 | 52.5 | 184.5 | 128.7 | 323.1 | 18.3 |
| | Establishments with 75 percent specialization or more in class | 5 | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) |
| 35629 | Parts for ball and roller bearings: | | | | | | | | | | |
| | Establishments with this product class primary | 22 | 1.9 | 33.7 | 1.4 | 2.7 | 24.0 | 72.8 | 57.2 | 129.5 | 6.9 |
| | Establishments with 75 percent specialization or more in class | 19 | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) |
| **3563** | **Air and gas compressors:** | | | | | | | | | | |
| | Entire industry | 282 | 32.1 | 709.3 | 17.5 | 34.1 | 344.0 | 1 470.6 | 1 698.3 | 3 270.0 | 118.1 |
| | Establishments with 75 percent specialization or more | 246 | 26.4 | 581.4 | 14.5 | 27.8 | 281.4 | 1 255.2 | 1 416.5 | 2 735.1 | 105.0 |
| 35631 | Air and gas compressors and vacuum pumps: | | | | | | | | | | |
| | Establishments with this product class primary | 104 | 21.6 | 460.0 | 12.0 | 23.0 | 225.4 | 951.3 | 1 191.5 | 2 220.7 | 90.9 |
| | Establishments with 75 percent specialization or more in class | 65 | 8.1 | 168.5 | 4.6 | 8.9 | 82.0 | 364.7 | 559.5 | 939.2 | 49.9 |
| 35632 | Parts for air and gas compressors: | | | | | | | | | | |
| | Establishments with this product class primary | 21 | 6.2 | 151.8 | 3.1 | 6.4 | 71.1 | 318.0 | 240.0 | 572.7 | 18.6 |
| | Establishments with 75 percent specialization or more in class | 13 | .9 | 17.3 | .6 | 1.2 | 10.5 | 37.3 | 30.1 | 67.6 | 1.9 |
| 35635 | Industrial spraying equipment: | | | | | | | | | | |
| | Establishments with this product class primary | 39 | 3.3 | 80.1 | 1.8 | 3.6 | 37.9 | 167.0 | 228.9 | 403.0 | 5.6 |
| | Establishments with 75 percent specialization or more in class | 30 | 2.7 | 64.8 | 1.6 | 3.1 | 33.4 | 148.2 | 209.4 | 363.5 | 4.1 |
| **3564** | **Blowers and fans:** | | | | | | | | | | |
| | Entire industry | 502 | 29.8 | 553.6 | 19.1 | 37.2 | 306.0 | 1 160.0 | 999.8 | 2 173.5 | 57.1 |
| | Establishments with 75 percent specialization or more | 456 | 22.7 | 422.1 | 14.9 | 29.4 | 234.2 | 900.2 | 729.6 | 1 646.4 | 46.6 |
| 35643 | Centrifugal fans and blowers: | | | | | | | | | | |
| | Establishments with this product class primary | 63 | 8.8 | 181.7 | 5.5 | 10.7 | 101.6 | 321.6 | 318.3 | 641.8 | 19.7 |
| | Establishments with 75 percent specialization or more in class | 44 | 4.3 | 94.3 | 2.9 | 5.7 | 52.8 | 160.9 | 164.0 | 334.6 | 11.4 |
| 35644 | Propeller and axial fans, and power roof ventilators: | | | | | | | | | | |
| | Establishments with this product class primary | 50 | 7.0 | 128.9 | 4.7 | 9.6 | 73.8 | 274.2 | 210.6 | 489.2 | 13.7 |
| | Establishments with 75 percent specialization or more in class | 39 | 5.1 | 93.3 | 3.4 | 6.6 | 52.6 | 198.3 | 145.9 | 346.5 | 10.2 |
| 35645 | Air purification equipment for environmental systems: | | | | | | | | | | |
| | Establishments with this product class primary | 99 | 7.2 | 114.7 | 5.0 | 9.6 | 67.4 | 228.7 | 208.9 | 440.1 | 16.6 |
| | Establishments with 75 percent specialization or more in class | 81 | 5.4 | 79.4 | 3.9 | 7.5 | 48.9 | 170.4 | 152.2 | 324.0 | 12.0 |
| 35646 | Air purification equipment for industrial gases: | | | | | | | | | | |
| | Establishments with this product class primary | 58 | 4.7 | 98.2 | 2.5 | 4.6 | 45.1 | 271.7 | 212.4 | 488.0 | 5.0 |
| | Establishments with 75 percent specialization or more in class | 44 | 3.0 | 64.4 | 1.5 | 2.9 | 27.0 | 188.8 | 117.1 | 307.3 | 3.8 |
| 3565 | **Industrial patterns:** | | | | | | | | | | |
| | Entire industry | 996 | 9.8 | 217.6 | 8.1 | 14.8 | 173.4 | 347.6 | 97.6 | 452.3 | 15.8 |
| | Establishments with 75 percent specialization or more | 973 | 9.4 | 204.6 | 7.7 | 14.0 | 163.9 | 327.0 | 93.5 | 427.5 | 14.7 |
| **3566** | **Speed changers, drives, and gears:** | | | | | | | | | | |
| | Entire industry | 307 | 23.8 | 499.4 | 15.7 | 29.4 | 295.7 | 1 011.0 | 551.1 | 1 621.3 | 90.9 |
| | Establishments with 75 percent specialization or more | 278 | 18.0 | 378.0 | 12.2 | 23.3 | 225.1 | 768.8 | 447.0 | 1 256.2 | 71.7 |
| **3567** | **Industrial furnaces and ovens:** | | | | | | | | | | |
| | Entire industry | 354 | 16.5 | 323.3 | 9.4 | 18.3 | 154.1 | 646.2 | 471.6 | 1 130.6 | 21.9 |
| | Establishments with 75 percent specialization or more | 317 | 13.4 | 264.9 | 7.5 | 14.6 | 124.8 | 527.0 | 386.3 | 922.8 | 18.7 |
| 35671 | Electric industrial furnaces, ovens, and kilns: | | | | | | | | | | |
| | Establishments with this product class primary | 58 | 4.4 | 91.7 | 2.5 | 5.1 | 44.6 | 172.9 | 137.1 | 316.2 | 5.6 |
| | Establishments with 75 percent specialization or more in class | 33 | 2.3 | 47.7 | 1.4 | 3.1 | 25.8 | 96.0 | 75.4 | 173.1 | 2.6 |
| 35672 | Fuel-fired industrial furnaces, ovens, and kilns: | | | | | | | | | | |
| | Establishments with this product class primary | 58 | 3.8 | 80.6 | 2.0 | 3.9 | 37.0 | 164.2 | 142.3 | 311.5 | 6.0 |
| | Establishments with 75 percent specialization or more in class | 31 | 1.5 | 29.8 | .9 | 1.6 | 13.9 | 64.8 | 62.0 | 129.8 | 3.6 |
| 35674 | High frequency induction and dielectric heating equipment: | | | | | | | | | | |
| | Establishments with this product class primary | 28 | 2.1 | 47.2 | 1.0 | 1.9 | 17.6 | 97.2 | 64.1 | 161.4 | 2.2 |
| | Establishments with 75 percent specialization or more in class | 19 | 1.3 | 26.5 | .6 | 1.2 | 10.1 | 61.9 | 42.4 | 104.1 | .9 |
| 35675 | Electrical heating equipment for industrial use, n.e.c.: | | | | | | | | | | |
| | Establishments with this product class primary | 63 | 5.1 | 87.2 | 3.3 | 6.2 | 46.2 | 178.8 | 104.3 | 284.7 | 7.1 |
| | Establishments with 75 percent specialization or more in class | 49 | 3.0 | 49.3 | 2.0 | 3.8 | 26.8 | 99.3 | 50.8 | 151.0 | 4.1 |
| **3568** | **Power transmission equipment, n.e.c.:** | | | | | | | | | | |
| | Entire industry | 294 | 27.1 | 556.4 | 18.1 | 33.3 | 337.2 | 1 153.9 | 767.4 | 1 940.5 | 75.0 |
| | Establishments with 75 percent specialization or more | 266 | 21.5 | 439.3 | 14.4 | 26.6 | 266.4 | 933.7 | 609.5 | 1 560.4 | 64.0 |
| 35681 | Plain bearings and bushings: | | | | | | | | | | |
| | Establishments with this product class primary | 73 | 6.3 | 123.8 | 4.5 | 8.4 | 80.0 | 231.0 | 150.0 | 382.6 | 11.1 |
| | Establishments with 75 percent specialization or more in class | 60 | 4.9 | 95.1 | 3.6 | 6.6 | 61.2 | 169.3 | 116.3 | 284.0 | 9.7 |
| 35683 | Mechanical power transmission equipment, n.e.c.: | | | | | | | | | | |
| | Establishments with this product class primary | 146 | 20.0 | 420.3 | 12.9 | 23.8 | 249.1 | 898.9 | 601.6 | 1 517.6 | 62.8 |
| | Establishments with 75 percent specialization or more in class | 127 | 15.4 | 324.1 | 10.0 | 18.4 | 192.7 | 716.6 | 464.1 | 1 198.0 | 53.0 |

See footnotes at end of table.

## Table 5a. Industry Statistics by Industry and Primary Product Class Specialization: 1982—Con.

[Table presents selected statistics for establishments according to their degree of specialization in products primary to their industry. Measures of plant specialization shown are (1) industry specialization: ratio of primary product shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment; and (2) product class specialization: ratio of largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment. See appendix for method of computing ratios. Statistics for establishments with specialization ratios of less than 75 percent are included in total lines but are not shown as a separate class. In addition, data may not be shown for various reasons; e.g., to avoid disclosing data for individual companies. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes.]

| Industry or product class code | Industry or product class by percent of specialization | All establishments (number) | All employees | | Production workers | | | Value added by manufacture (million dollars) | Cost of materials (million dollars) | Value of shipments (million dollars) | New capital expenditures (million dollars) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Number (1,000) | Payroll (million dollars) | Number (1,000) | Hours (millions) | Wages (million dollars) | | | | |
| 3569 | **General industrial machinery, n.e.c.:** | | | | | | | | | | |
| | Entire industry | 1 460 | 63.1 | 1 256.0 | 37.4 | 73.7 | 621.4 | 2 623.9 | 1 893.0 | 4 566.5 | 132.3 |
| | Establishments with 75 percent specialization or more | 1 317 | 47.4 | 936.8 | 28.5 | 57.0 | 466.8 | 1 977.7 | 1 482.1 | 3 490.5 | 102.2 |
| 35691 | Packing, packaging, and bottling machinery: | | | | | | | | | | |
| | Establishments with this product class primary | 189 | 14.8 | 317.7 | 8.3 | 16.6 | 160.0 | 638.0 | 357.2 | 1 000.6 | 22.1 |
| | Establishments with 75 percent specialization or more in class | 155 | 10.0 | 218.5 | 6.0 | 12.3 | 117.8 | 404.2 | 250.1 | 658.2 | 11.8 |
| 35693 | Filters and strainers, except fluid power: | | | | | | | | | | |
| | Establishments with this product class primary | 173 | 16.2 | 321.3 | 9.0 | 18.4 | 141.6 | 717.2 | 508.0 | 1 243.1 | 43.8 |
| | Establishments with 75 percent specialization or more in class | 145 | 11.7 | 232.3 | 6.6 | 13.9 | 101.2 | 527.8 | 376.4 | 909.7 | 35.3 |
| 35694 | Filters for hydraulic fluid power systems, excluding aircraft type: | | | | | | | | | | |
| | Establishments with this product class primary | 14 | 2.0 | 33.8 | 1.3 | 2.4 | 17.7 | 74.0 | 39.1 | 114.8 | 5.1 |
| | Establishments with 75 percent specialization or more in class | 7 | .4 | 7.2 | .2 | .4 | 3.7 | 14.3 | 12.4 | 27.1 | .6 |
| 35695 | Filters for pneumatic fluid power systems, excluding aircraft type: | | | | | | | | | | |
| | Establishments with this product class primary | 3 | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) |
| | Establishments with 75 percent specialization or more in class | - | - | - | - | - | - | - | - | - | - |
| 35696 | Filters for aircraft fluid power (hydraulic and pneumatic) system | | | | | | | | | | |
| | Establishments with this product class primary | 2 | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) |
| | Establishments with 75 percent specialization or more in class | 1 | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) | (D) |
| 35699 | General industrial machinery, n.e.c.: | | | | | | | | | | |
| | Establishments with this product class primary | 292 | 20.1 | 411.4 | 12.2 | 23.4 | 209.4 | 846.6 | 751.0 | 1 618.0 | 47.8 |
| | Establishments with 75 percent specialization or more in class | 239 | 14.2 | 284.9 | 8.7 | 16.7 | 146.6 | 612.1 | 559.4 | 1 180.9 | 36.1 |

Note: For qualifications of data, see footnotes on table 1a.

## Table 5b. Industry-Product Analysis—Value of Shipments and Primary Product Shipments, Specialization and Coverage Ratios for the Industry: 1982 and Earlier Census Years

[An establishment is assigned to an industry based on shipment values of products representing largest amount considered primary to an industry. Frequently, establishment shipments comprise mixtures of products assigned to an industry (primary), those considered primary to other industries (secondary), and receipts for activities such as merchandising or contract work. Columns A-D show this product pattern for an industry, and column E shows primary product specialization ratio. The extent to which an industry's primary products are shipped by establishments classified in and out of an industry is shown in columns F-H and coverage ratio is shown in column I. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Industry and product group code | Industry and census year | Value of shipments | | | | | Value of primary product shipments | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Total (million dollars) | Primary products (million dollars) | Secondary products (million dollars) | Miscellaneous receipts (million dollars) | Primary product specialization ratio Col. B÷ Col. B+C (percent) | Total made in all industries (million dollars) | Made in this industry (million dollars) | Made in other industries (million dollars) | Coverage ratio Col. B÷ Col. F (percent) |
| | | A | B | C | D | E | F | G | H | I |
| 3561 | Pumps and pumping equipment 1982 | 6 198.3 | 5 154.5 | 596.4 | 447.4 | 90 | 5 723.1 | 5 154.5 | 568.6 | 90 |
| | 1977 | 3 773.7 | 3 098.7 | 411.3 | 263.7 | 88 | 3 522.8 | 3 098.7 | 424.1 | 88 |
| | 1972 | 1 917.3 | 1 408.1 | 296.1 | 213.1 | 83 | 1 632.9 | 1 408.1 | 224.8 | 86 |
| 3562 | Ball and roller bearings 1982 | 3 135.8 | 2 939.2 | 120.5 | 76.0 | 96 | 2 973.1 | 2 939.2 | 33.9 | 99 |
| | 1977 | 2 567.3 | 2 393.8 | 94.6 | 78.9 | 96 | 2 444.5 | 2 393.8 | 50.7 | 98 |
| | 1972 | 1 530.5 | 1 398.8 | 86.8 | 44.9 | 94 | 1 418.7 | 1 398.8 | 19.9 | 99 |
| 3563 | Air and gas compressors 1982 | 3 270.0 | 2 603.3 | 300.4 | 366.3 | 90 | 2 846.2 | 2 603.3 | 242.9 | 91 |
| | 1977 | 2 075.6 | 1 704.0 | 238.9 | 132.7 | 88 | 1 923.4 | 1 704.0 | 219.4 | 89 |
| | 1972 | 858.4 | 649.7 | 134.7 | 74.0 | 83 | 722.7 | 649.7 | 73.0 | 90 |
| 3564 | Blowers and fans 1982 | 2 173.5 | 1 827.1 | 252.4 | 93.9 | 88 | 1 994.5 | 1 827.1 | 167.4 | 92 |
| | 1977 | 1 430.8 | 1 230.8 | 146.6 | 53.4 | 89 | 1 422.3 | 1 230.8 | 191.5 | 87 |
| | 1972 | 805.3 | 571.2 | 151.8 | 82.3 | 79 | 682.0 | 571.2 | 110.8 | 84 |
| 3565 | Industrial patterns 1982 | 452.3 | 428.8 | 13.4 | 10.1 | 97 | 561.5 | 428.8 | 132.7 | 76 |
| | 1977 | 320.6 | 308.9 | 9.5 | 2.2 | 97 | 411.9 | 308.9 | 103.0 | 75 |
| | 1972 | 198.0 | 183.6 | 10.3 | 4.1 | 95 | 234.4 | 183.6 | 50.8 | 78 |
| 3566 | Speed changers, drives, and gears 1982 | 1 621.3 | 1 347.8 | 202.5 | 71.0 | 87 | 1 557.4 | 1 347.8 | 209.6 | 87 |
| | 1977 | 1 222.3 | 1 011.2 | 146.8 | 64.3 | 87 | 1 199.7 | 1 011.2 | 188.5 | 84 |
| | 1972 | 632.7 | 525.6 | 72.3 | 34.8 | 88 | 593.0 | 525.6 | 67.4 | 89 |

See footnotes at end of table.

## Table 5b. Industry-Product Analysis—Value of Shipments and Primary Product Shipments, Specialization and Coverage Ratios for the Industry: 1982 and Earlier Census Years—Con.

[An establishment is assigned to an industry based on shipment values of products representing largest amount considered primary to an industry. Frequently, establishment shipments comprise mixtures of products assigned to an industry (primary), those considered primary to other industries (secondary), and receipts for activities such as merchandising or contract work. Columns A-D show this product pattern for an industry, and column E shows primary product specialization ratio. The extent to which an industry's primary products are shipped by establishments classified in and out of an industry is shown in columns F-H and coverage ratio is shown in column I. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Industry and product group code | Industry and census year | Value of shipments | | | | | Value of primary product shipments | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Total (million dollars) | Primary products (million dollars) | Secondary products (million dollars) | Miscellaneous receipts (million dollars) | Primary product specialization ratio Col. B ÷ Col. B+C (percent) | Total made in all industries (million dollars) | Made in this industry (million dollars) | Made in other industries (million dollars) | Coverage ratio Col. B ÷ Col. F (percent) |
| | | A | B | C | D | E | F | G | H | I |
| 3567 | Industrial furnaces and ovens 1982 | 1 130.6 | 968.1 | 104.0 | 58.4 | 90 | 1 026.8 | 968.1 | 58.6 | 94 |
| | 1977 | 746.3 | 639.7 | 60.7 | 45.9 | 91 | 707.1 | 639.7 | 67.4 | 90 |
| | 1972 | 443.2 | 311.5 | 85.4 | 46.3 | 78 | 341.1 | 311.5 | 29.6 | 91 |
| 3568 | Power transmission equipment, n.e.c. 1982 | 1 940.5 | 1 661.6 | 191.9 | 87.0 | 90 | 1 985.6 | 1 661.6 | 324.0 | 84 |
| | 1977 | 1 626.0 | 1 265.6 | 270.6 | 89.8 | 82 | 1 710.9 | 1 265.6 | 445.3 | 74 |
| | 1972 | 876.4 | 719.0 | 106.8 | 50.6 | 87 | 975.0 | 719.0 | 256.0 | 74 |
| 3569 | General industrial machinery, n.e.c. 1982 | 4 566.5 | 3 812.6 | 539.2 | 214.8 | 88 | 4 410.7 | 3 812.6 | 598.1 | 86 |
| | 1977 | 2 779.5 | 2 300.1 | 315.9 | 163.5 | 88 | 2 689.4 | 2 300.1 | 389.3 | 86 |
| | 1972 | 1 171.9 | 922.7 | 163.0 | 86.2 | 85 | 1 132.8 | 922.7 | 210.1 | 81 |

[1]Minimum percentage; exact percentage withheld to avoid disclosing data for individual companies.
[2]Relationships are not meaningful because of predominance of miscellaneous receipts, particularly receipts for contract and commission work on materials owned by others.

## Table 5c-1. Industry-Product Analysis—Shipments by Product Class and Industry: 1982

[Million dollars. Table shows where products of an industry (referred to as primary and listed in table 6a) are made and what products are made by establishments classified in an industry. Read down an industry column to find what products are produced in an industry. Only those product groups that have at least $2 million in shipments from establishments classified in one of industries included in this chapter are shown. Read across to determine where products of industries in this chapter are produced. To extent that some of primary products are made in industries not included in this chapter, value of such shipments is shown in "Other industries" column. Specified "Other industries" are listed in table 5c-2 if they account for more than $5 million of products primary to this chapter . For meaning of abbreviations and symbols, see explanatory text. For explanation of terms, see appendixes]

| 1982 product code | Product group, product class, and miscellaneous receipts | All industries | Pumps and pumping equipment (SIC 3561) | Ball and roller bearings (SIC 3562) | Air and gas compressors (SIC 3563) | Blowers and fans (SIC 3564) | Industrial patterns (SIC 3565) |
|---|---|---|---|---|---|---|---|
| | **Total** | (X) | 6 198.3 | 3 135.8 | 3 270.0 | 2 173.5 | 452.3 |
| | **Primary products** | (X) | 5 154.5 | 2 939.2 | 2 603.3 | 1 827.1 | 428.8 |
| | **Secondary products** | (X) | 596.4 | 120.5 | 300.4 | 252.4 | 13.4 |
| | **Miscellaneous receipts** | (X) | 447.4 | 76.0 | 366.3 | 93.9 | 10.1 |
| 3561- | **Pumps and pumping equipment** | 5 723.1 | 5 154.5 | - | (D) | (D) | (D) |
| 35611 | Industrial pumps, except fluid power pumps | 1 916.9 | 1 801.3 | - | 16.5 | - | - |
| 35613 | Domestic water systems | 215.5 | (D) | - | - | (D) | - |
| 35615 | Pumps, n.e.c. | 1 048.2 | 791.1 | - | (D) | (D) | - |
| 35617 | Fluid power pumps, except aerospace | 648.5 | 587.5 | - | (D) | - | (D) |
| 35618 | Aerospace fluid power pumps | 81.3 | 77.2 | - | - | - | - |
| 3561A | Parts for fluid power pumps, except aerospace | 218.6 | 178.6 | - | - | - | - |
| 3561B | Parts for aerospace fluid power pumps | 103.8 | (D) | - | - | - | - |
| 3561C | Parts for pumps, except fluid power | 1 298.9 | 1 241.8 | - | 6.5 | - | - |
| 35610 | Pumps and compressors, n.s.k. | 191.4 | 187.7 | - | (D) | (D) | - |
| 3562- | **Ball and roller bearings** | 2 973.1 | - | 2 939.2 | - | (D) | - |
| 35621 | Ball bearings, unmounted | 1 087.1 | - | 1 072.4 | - | - | - |
| 35622 | Tapered roller bearings, unmounted | 710.9 | - | (D) | - | (D) | - |
| 35623 | Roller bearings, except tapered, unmounted | 614.1 | - | (D) | - | - | - |
| 35624 | Mounted bearings, except plain | 241.7 | - | 235.5 | - | - | - |
| 35629 | Parts for ball and roller bearings | 298.4 | - | 291.2 | - | - | - |
| 35620 | Ball and roller bearings, n.s.k. | 20.9 | - | 20.9 | - | - | - |
| 3563- | **Air and gas compressors** | 2 846.2 | (D) | - | 2 603.3 | (D) | - |
| 35631 | Air and gas compressors and vacuum pumps | 1 677.1 | 17.0 | - | 1 533.2 | (D) | - |
| 35632 | Parts for air and gas compressors | 652.7 | (D) | - | 621.9 | - | - |
| 35635 | Industrial spraying equipment | 442.0 | (D) | - | 375.0 | - | - |
| 35630 | Air and gas compressors, n.s.k. | 74.4 | - | - | 73.3 | - | - |
| 3564- | **Blowers and fans** | 1 994.5 | - | - | (D) | 1 827.1 | - |
| 35643 | Centrifugal fans and blowers | 556.9 | - | - | (D) | 525.4 | - |
| 35644 | Propeller and axial fans, and power roof ventilators | 464.8 | - | - | - | 427.5 | - |
| 35645 | Air purification equipment for environmental systems | 425.5 | - | - | (D) | 379.0 | - |
| 35646 | Air purification equipment for industrial gases | 425.6 | - | - | - | 381.6 | - |
| 35640 | Blowers and fans, n.s.k. | 121.7 | - | - | (D) | 113.6 | - |
| 35650 | **Industrial patterns, except shoe patterns** | 561.5 | - | - | - | - | 428.8 |
| 35660 | **Speed changers, drives, and gears** | 1 557.4 | (D) | (D) | - | (D) | - |
| 3567- | **Industrial furnaces and ovens** | 1 026.8 | - | - | (D) | (D) | - |
| 35671 | Electric industrial furnaces, ovens, and kilns | 295.2 | - | - | (D) | - | - |
| 35672 | Fuel-fired industrial furnaces, ovens, and kilns | 248.6 | - | - | (D) | - | - |
| 35674 | High frequency induction and dielectric heating equipment | 131.9 | - | - | - | - | - |
| 35675 | Electrical heating equipment for industrial use, n.e.c. | 289.1 | - | - | - | (D) | - |
| 35670 | Industrials furnaces and ovens, n.s.k. | 62.0 | - | - | - | - | - |
| 3568- | **Power transmission equipment, n.e.c.** | 1 985.6 | (D) | (D) | - | - | - |
| 35681 | Plain bearings and bushings | 385.0 | - | (D) | - | - | - |
| 35683 | Mechanical power transmission equipment, n.e.c. | 1 556.3 | (D) | 50.4 | - | - | - |
| 35680 | Power transmission equipment, n.e.c., n.s.k. | 44.3 | - | - | - | - | - |

See footnotes at end of table.

## Table 5c-1. Industry-Product Analysis—Shipments by Product Class and Industry: 1982—Con.

[Million dollars. Table shows where products of an industry (referred to as primary and listed in table 6a) are made and what products are made by establishments classified in an industry. Read down an industry column to find what products are produced in an industry. Only those product groups that have at least $2 million in shipments from establishments classified in one of industries included in this chapter are shown. Read across to determine where products of industries in this chapter are produced. To extent that some of primary products are made in industries not included in this chapter, value of such shipments is shown in "Other industries" column. Specified "Other industries" are listed in table 5c-2 if they account for more than $5 million of products primary to this chapter . For meaning of abbreviations and symbols, see explanatory text. For explanation of terms, see appendixes]

| 1982 product code | Product group, product class, and miscellaneous receipts | All industries | Pumps and pumping equipment (SIC 3561) | Ball and roller bearings (SIC 3562) | Air and gas compressors (SIC 3563) | Blowers and fans (SIC 3564) | Industrial patterns (SIC 3565) |
|---|---|---|---|---|---|---|---|
| 3569- | **General industrial machinery, n.e.c.** | **4 410.7** | **(D)** | **-** | **27.5** | **(D)** | **-** |
| 35691 | Packing, packaging, and bottling machinery | 885.2 | - | - | - | - | - |
| 35693 | Filters and strainers, except fluid power | 1 137.4 | 4.6 | - | (D) | (D) | - |
| 35694 | Filters for hydraulic fluid power systems, excluding aircraft type | 114.5 | - | - | - | (D) | - |
| 35695 | Filters for pneumatic fluid power systems, excluding aircraft type | 60.2 | - | - | - | - | - |
| 35696 | Filters for aircraft fluid power (hydraulic and pneumatic) systems | 41.0 | - | - | - | - | - |
| 35699 | General industrial machinery, n.e.c. | 1 680.4 | (D) | - | (D) | (D) | - |
| 35690 | General industrial machinery, n.e.c., n.s.k. | 492.0 | - | - | (D) | (D) | - |
| | **OTHER SHIPMENTS BY FOUR-DIGIT PRODUCT GROUP** | | | | | | |
| 1446- | Industrial sand | (X) | - | - | - | - | (D) |
| 2541- | Wood partitions and fixtures | (X) | - | - | - | (D) | - |
| 2891- | Adhesives and sealants | (X) | - | - | - | (D) | - |
| 2899- | Chemical preparations, n.e.c. | (X) | (D) | - | - | - | - |
| 3079- | Miscellaneous plastics products | (X) | (D) | - | - | 2.6 | - |
| 3293- | Gaskets, packing, and sealing devices | (X) | (D) | - | - | (D) | - |
| 3321- | Gray iron castings | (X) | 7.8 | - | (D) | - | - |
| 3423- | Hand and edge tools, n.e.c. | (X) | (D) | - | (D) | - | - |
| 3429- | Hardware, n.e.c. | (X) | (D) | (D) | - | - | - |
| 3433- | Heating equipment, except electric | (X) | (D) | - | - | 2.4 | - |
| 3443- | Fabricated plate work (boiler shops) | (X) | (D) | - | (D) | 4.4 | (D) |
| 3444- | Sheet metal work | (X) | - | - | (D) | 30.2 | - |
| 3446- | Architectural and ornamental metal work | (X) | - | - | - | (D) | - |
| 3448- | Prefabricated metal buildings | (X) | - | - | - | (D) | - |
| 3451- | Screw machine products | (X) | (D) | (D) | - | - | - |
| 3452- | Bolts, nuts, rivets, and washers | (X) | - | (D) | - | - | - |
| 3469- | Metal stampings, n.e.c. | (X) | - | (D) | - | (D) | - |
| 3479- | Metal coating and allied services | (X) | (D) | - | - | - | - |
| 3494- | Valves and pipe fittings | (X) | 120.7 | - | 16.0 | (D) | (D) |
| 3499- | Fabricated metal products, n.e.c. | (X) | (D) | - | (D) | (D) | - |
| 3511- | Turbines and turbine generator sets | (X) | (D) | - | 56.6 | (D) | - |
| 3519- | Internal combustion engines, n.e.c. | (X) | (D) | - | (D) | - | - |
| 3523- | Farm machinery and equipment | (X) | (D) | - | (D) | (D) | - |
| 3531- | Construction machinery | (X) | (D) | - | (D) | - | - |
| 3532- | Mining machinery | (X) | (D) | - | (D) | - | - |
| 3533- | Oil field machinery | (X) | (D) | - | (D) | - | - |
| 3535- | Conveyors and conveying equipment | (X) | - | (D) | (D) | 12.0 | - |
| 3541- | Machine tools, metal cutting types | (X) | (D) | - | - | (D) | - |
| 3542- | Machine tools, metal forming types | (X) | (D) | - | (D) | (D) | - |
| 3544- | Special dies, tools, jigs, and fixtures | (X) | - | - | - | (D) | 5.5 |
| 3549- | Metalworking machinery, n.e.c. | (X) | (D) | - | - | - | - |
| 3551- | Food products machinery | (X) | 7.8 | - | (D) | .5 | - |
| 3553- | Woodworking machinery | (X) | (D) | - | - | - | - |
| 3559- | Special industry machinery, n.e.c. | (X) | (D) | (D) | (D) | 3.7 | (D) |
| 3573- | Electronic computing equipment | (X) | - | (D) | - | (D) | - |
| 3585- | Refrigeration and heating equipment | (X) | (D) | - | (D) | 23.7 | - |
| 3586- | Measuring and dispensing pumps | (X) | (D) | - | (D) | - | - |
| 3589- | Service industry machinery, n.e.c. | (X) | 11.0 | - | (D) | 16.1 | - |
| 3592- | Carburetors, pistons, rings, and valves | (X) | (D) | - | - | - | - |
| 3599- | Machinery, except electrical, n.e.c. | (X) | 57.9 | - | 1.1 | 3.4 | 2.0 |
| 3612- | Transformers | (X) | (D) | - | - | (D) | - |
| 3621- | Motors and generators | (X) | (D) | - | (D) | (D) | - |
| 3622- | Industrial controls | (X) | - | - | (D) | (D) | - |
| 3634- | Electric housewares and fans | (X) | - | - | - | (D) | - |
| 3648- | Lighting equipment, n.e.c. | (X) | (D) | - | - | (D) | - |
| 3699- | Electrical equipment and supplies, n.e.c. | (X) | - | - | - | 15.3 | - |
| 3714- | Motor vehicle parts and accessories | (X) | (D) | - | (D) | (D) | (D) |
| 3724- | Aircraft engines and engine parts | (X) | (D) | - | - | - | - |
| 3728- | Aircraft equipment, n.e.c. | (X) | (D) | (D) | - | - | - |
| 3743- | Railroad equipment | (X) | - | - | - | (D) | - |
| 3811- | Engineering and scientific instruments | (X) | - | (D) | 20.6 | - | - |
| 3823- | Process control instruments | (X) | (D) | - | (D) | - | - |
| 3825- | Instruments to measure electricity | (X) | (D) | - | (D) | (D) | - |
| | **MISCELLANEOUS RECEIPTS** | | | | | | |
| 93000 00 | Receipts for work done for others on their materials | 5.1 | 13.7 | 3.1 | 9.3 | 6.8 | (X) |
| 99980 13 | Sales of scrap and refuse | (X) | (X) | 7.9 | (X) | 1.0 | (Z) |
| 99980 31 | Receipts for installation or construction of products of the establishment | (X) | 14.9 | (X) | (D) | (X) | (X) |
| 99980 41 | Receipts for research and development work | (X) | (D) | - | (D) | (X) | (X) |
| 99980 61 | Receipts for repair work | (X) | 125.2 | (X) | 52.0 | (X) | 2.3 |
| 99980 98 | Other miscellaneous receipts, including receipts for repair work, etc. | (X) | 33.5 | (D) | 117.2 | 23.1 | 1.0 |
| 99980 00 | Miscellaneous receipts, including receipts for repair work, sales of scrap and refuse, etc., n.s.k. | (X) | (D) | (D) | (D) | 3.5 | .4 |
| 99989 00 | Sales of products bought and resold without further manufacture, processing, or assembly at establishment | (X) | 257.0 | 61.1 | 163.0 | 59.5 | 1.3 |

See footnotes at end of table.

## Table 5c-1. Industry-Product Analysis—Shipments by Product Class and Industry: 1982—Con.

[Million dollars. Table shows where products of an industry (referred to as primary and listed in table 6a) are made and what products are made by establishments classified in an industry. Read down an industry column to find what products are produced in an industry. Only those product groups that have at least $2 million in shipments from establishments classified in one of industries included in this chapter are shown. Read across to determine where products of industries in this chapter are produced. To extent that some of primary products are made in industries not included in this chapter, value of such shipments is shown in "Other industries" column. Specified "Other industries" are listed in table 5c-2 if they account for more than $5 million of products primary to this chapter . For meaning of abbreviations and symbols, see explanatory text. For explanation of terms, see appendixes]

| 1982 product code | Product group, product class, and miscellaneous receipts | Speed changers, drives, and gears (SIC 3566) | Industrial furnaces and ovens (SIC 3567) | Power transmission equipment, n.e.c. (SIC 3568) | General industrial machinery, n.e.c. (SIC 3569) | Other industries |
|---|---|---|---|---|---|---|
| | **Total** | 1 621.3 | 1 130.6 | 1 940.5 | 4 566.5 | (X) |
| | **Primary products** | 1 347.8 | 968.1 | 1 661.6 | 3 812.6 | (X) |
| | **Secondary products** | 202.5 | 104.0 | 191.9 | 539.2 | (X) |
| | **Miscellaneous receipts** | 71.0 | 58.4 | 87.0 | 214.8 | (X) |
| 3561- | **Pumps and pumping equipment** | (D) | - | (D) | (D) | 500.0 |
| 35611 | Industrial pumps, except fluid power pumps | (D) | - | - | 1.9 | (D) |
| 35613 | Domestic water systems | - | - | - | - | 23.6 |
| 35615 | Pumps, n.e.c. | - | - | - | (D) | 237.9 |
| 35617 | Fluid power pumps, except aerospace | (D) | - | (D) | (D) | 48.0 |
| 35618 | Aerospace fluid power pumps | - | - | - | - | 4.1 |
| 3561A | Parts for fluid power pumps, except aerospace | - | - | - | - | 39.9 |
| 3561B | Parts for aerospace fluid power pumps | - | - | - | - | (D) |
| 3561C | Parts for pumps, except fluid power | - | - | (D) | (D) | (D) |
| 35610 | Pumps and compressors, n.s.k. | - | - | (D) | (D) | 2.5 |
| 3562- | **Ball and roller bearings** | (D) | - | (D) | - | 24.1 |
| 35621 | Ball bearings, unmounted | (D) | - | (D) | - | (D) |
| 35622 | Tapered roller bearings, unmounted | (D) | - | (D) | - | - |
| 35623 | Roller bearings, except tapered, unmounted | - | - | (D) | - | (D) |
| 35624 | Mounted bearings, except plain | (D) | - | (D) | - | (D) |
| 35629 | Parts for ball and roller bearings | - | - | (D) | - | (D) |
| 35620 | Ball and roller bearings, n.s.k. | - | - | - | - | - |
| 3563- | **Air and gas compressors** | - | (D) | - | (D) | 158.1 |
| 35631 | Air and gas compressors and vacuum pumps | - | - | - | (D) | (D) |
| 35632 | Parts for air and gas compressors | - | - | - | (D) | 26.0 |
| 35635 | Industrial spraying equipment | - | (D) | - | (D) | 10.6 |
| 35630 | Air and gas compressors, n.s.k. | - | - | - | (D) | (D) |
| 3564- | **Blowers and fans** | - | (D) | - | 2.8 | (D) |
| 35643 | Centrifugal fans and blowers | - | - | - | - | (D) |
| 35644 | Propeller and axial fans, and power roof ventilators | - | - | - | - | 37.3 |
| 35645 | Air purification equipment for environmental systems | - | (D) | - | (D) | (D) |
| 35646 | Air purification equipment for industrial gases | - | - | - | (D) | (D) |
| 35640 | Blowers and fans, n.s.k. | - | (D) | - | (D) | 6.4 |
| 35650 | **Industrial patterns, except shoe patterns** | - | - | (D) | - | (D) |
| 35660 | **Speed changers, drives, and gears** | 1 347.8 | - | 72.3 | (D) | 106.6 |
| 3567- | **Industrial furnaces and ovens** | - | 968.1 | - | 5.4 | (D) |
| 35671 | Electric industrial furnaces, ovens, and kilns | - | 285.8 | - | (D) | (D) |
| 35672 | Fuel-fired industrial furnaces, ovens, and kilns | - | 227.3 | - | - | (D) |
| 35674 | High frequency induction and dielectric heating equipment | - | (D) | - | (D) | 4.0 |
| 35675 | Electrical heating equipment for industrial use, n.e.c. | - | 272.0 | - | (D) | 14.3 |
| 35670 | Industrials furnaces and ovens, n.s.k. | - | (D) | - | - | (D) |
| 3568- | **Power transmission equipment, n.e.c.** | 109.2 | - | 1 661.6 | (D) | 118.4 |
| 35681 | Plain bearings and bushings | (D) | - | (D) | - | (D) |
| 35683 | Mechanical power transmission equipment, n.e.c. | (D) | - | 1 288.7 | (D) | 92.7 |
| 35680 | Power transmission equipment, n.e.c., n.s.k. | (D) | - | (D) | - | (D) |
| 3569- | **General industrial machinery, n.e.c.** | (D) | (D) | - | 3 812.6 | 524.1 |
| 35691 | Packing, packaging, and bottling machinery | - | - | - | 789.1 | 96.1 |
| 35693 | Filters and strainers, except fluid power | (D) | - | - | 1 044.4 | 84.4 |
| 35694 | Filters for hydraulic fluid power systems, excluding aircraft type | - | - | - | (D) | (D) |
| 35695 | Filters for pneumatic fluid power systems, excluding aircraft type | - | - | - | (D) | (D) |
| 35696 | Filters for aircraft fluid power (hydraulic and pneumatic) systems | - | - | - | 32.9 | 8.1 |
| 35699 | General industrial machinery, n.e.c. | (D) | 1.1 | - | 1 338.1 | 280.9 |
| 35690 | General industrial machinery, n.e.c., n.s.k. | - | (D) | - | 474.5 | 16.8 |
| | **OTHER SHIPMENTS BY FOUR-DIGIT PRODUCT GROUP** | | | | | |
| 2399- | Fabricated textile products, n.e.c. | - | - | - | (D) | (X) |
| 2751- | Commercial printing, letterpress | - | - | - | (D) | (X) |
| 3079- | Miscellaneous plastics products | - | - | (D) | 21.7 | (X) |
| 3293- | Gaskets, packing, and sealing devices | - | - | (D) | - | (X) |
| 3322- | Malleable iron castings | - | - | (D) | - | (X) |
| 3325- | Steel castings, n.e.c. | (D) | (D) | 2.7 | - | (X) |
| 3353- | Aluminum sheet, plate, and foil | - | - | (D) | - | (X) |
| 3398- | Metal heat treating | - | (D) | - | - | (X) |
| 3429- | Hardware, n.e.c. | (D) | - | (D) | (D) | (X) |
| 3433- | Heating equipment, except electric | - | 17.7 | - | - | (X) |
| 3443- | Fabricated plate work (boiler shops) | - | (D) | - | 11.9 | (X) |
| 3444- | Sheet metal work | - | (D) | - | (D) | (X) |
| 3452- | Bolts, nuts, rivets, and washers | (D) | (D) | (D) | - | (X) |
| 3494- | Valves and pipe fittings | (D) | - | (D) | 8.2 | (X) |
| 3497- | Metal foil and leaf | - | - | - | (D) | (X) |
| 3499- | Fabricated metal products, n.e.c. | (D) | (D) | (D) | (D) | (X) |
| 3523- | Farm machinery and equipment | - | - | - | (D) | (X) |
| 3524- | Lawn and garden equipment | - | - | (D) | - | (X) |
| 3531- | Construction machinery | (D) | - | (D) | (D) | (X) |
| 3532- | Mining machinery | - | - | - | 10.1 | (X) |
| 3533- | Oil field machinery | (D) | - | - | 5.9 | (X) |
| 3535- | Conveyors and conveying equipment | (D) | 5.6 | 9.7 | 15.2 | (X) |
| 3536- | Hoists, cranes, and monorails | - | - | - | (D) | (X) |
| 3542- | Machine tools, metal forming types | (D) | (D) | - | (D) | (X) |
| 3544- | Special dies, tools, jigs, and fixtures | (D) | - | (D) | 2.2 | (X) |
| 3545- | Machine tool accessories | (D) | - | (D) | (D) | (X) |
| 3549- | Metalworking machinery, n.e.c. | - | (D) | - | 3.1 | (X) |
| 3551- | Food products machinery | - | - | - | 7.9 | (X) |
| 3554- | Paper industries machinery | - | - | (D) | 17.2 | (X) |
| 3555- | Printing trades machinery | - | - | - | (D) | (X) |
| 3559- | Special industry machinery, n.e.c. | - | 2.3 | .5 | 102.8 | (X) |
| 3579- | Office machines, n.e.c., and typewriters | - | - | - | (D) | (X) |
| 3585- | Refrigeration and heating equipment | - | (D) | (D) | (D) | (X) |
| 3589- | Service industry machinery, n.e.c. | - | (D) | - | 19.0 | (X) |
| 3592- | Carburetors, pistons, rings, and valves | - | - | - | (D) | (X) |

See footnotes at end of table.

## Table 5c-1. Industry-Product Analysis—Shipments by Product Class and Industry: 1982—Con.

[Million dollars. Table shows where products of an industry (referred to as primary and listed in table 6a) are made and what products are made by establishments classified in an industry. Read down an industry column to find what products are produced in an industry. Only those product groups that have at least $2 million in shipments from establishments classified in one of industries included in this chapter are shown. Read across to determine where products of industries in this chapter are produced. To extent that some of primary products are made in industries not included in this chapter, value of such shipments is shown in "Other industries" column. Specified "Other industries" are listed in table 5c-2 if they account for more than $5 million of products primary to this chapter . For meaning of abbreviations and symbols, see explanatory text. For explanation of terms, see appendixes]

| 1982 product code | Product group, product class, and miscellaneous receipts | Speed changers, drives, and gears (SIC 3566) | Industrial furnaces and ovens (SIC 3567) | Power transmission equipment, n.e.c. (SIC 3568) | General industrial machinery, n.e.c. (SIC 3569) | Other industries |
|---|---|---|---|---|---|---|
| | **OTHER SHIPMENTS BY FOUR-DIGIT PRODUCT GROUP**—Con. | | | | | |
| 3599- | Machinery, except electrical, n.e.c. | 1.9 | .6 | 2.8 | 16.1 | (X) |
| 3621- | Motors and generators | 19.8 | (D) | (D) | – | (X) |
| 3622- | Industrial controls | (D) | (D) | – | (D) | (X) |
| 3623- | Welding apparatus, electric | – | – | – | 2.4 | (X) |
| 3624- | Carbon and graphite products | – | (D) | (D) | – | (X) |
| 3631- | Household cooking equipment | – | (D) | – | – | (X) |
| 3634- | Electric housewares and fans | – | (D) | – | – | (X) |
| 3639- | Household appliances, n.e.c. | – | (D) | – | – | (X) |
| 3646- | Commercial lighting fixtures | – | (D) | – | – | (X) |
| 3676- | Electronic resistors | – | – | (D) | – | (X) |
| 3699- | Electrical equipment and supplies, n.e.c. | – | (D) | – | (D) | (X) |
| 3711- | Motor vehicles and car bodies | – | – | – | (D) | (X) |
| 3714- | Motor vehicle parts and accessories | (D) | (D) | (D) | 3.8 | (X) |
| 3728- | Aircraft equipment, n.e.c. | (D) | – | – | (D) | (X) |
| 3811- | Engineering and scientific instruments | – | 4.6 | (D) | (D) | (X) |
| 3822- | Environmental controls | – | (D) | – | – | (X) |
| 3824- | Fluid meters and counting devices | (D) | – | – | (D) | (X) |
| 3829- | Measuring and controlling devices, n.e.c. | – | (D) | (D) | 2.9 | (X) |
| 3832- | Optical instruments and lenses | – | – | – | (D) | (X) |
| 3842- | Surgical appliances and supplies | – | (D) | – | 4.2 | (X) |
| 3861- | Photographic equipment and supplies | – | – | – | (D) | (X) |
| 3952- | Lead pencils and art goods | – | – | – | (D) | (X) |
| 3999- | Manufacturing industries, n.e.c. | – | – | – | (D) | (X) |
| | **MISCELLANEOUS RECEIPTS** | | | | | |
| 93000 00 | Receipts for work done for others on their materials | 21.9 | 5.5 | 10.2 | 31.0 | (X) |
| 99980 13 | Sales of scrap and refuse | (D) | 1.1 | 2.7 | 3.7 | (X) |
| 99980 31 | Receipts for installation or construction of products of the establishment | (X) | 15.3 | (X) | 4.8 | (X) |
| 99980 41 | Receipts for research and development work | (D) | (X) | – | 1.6 | (X) |
| 99980 61 | Receipts for repair work | (X) | 13.8 | (X) | 22.1 | (X) |
| 99980 98 | Other miscellaneous receipts, including receipts for repair work, etc. | 9.4 | 3.5 | (D) | 28.5 | (X) |
| 99980 00 | Miscellaneous receipts, including receipts for repair work, sales of scrap and refuse, etc., n.s.k. | .1 | .2 | (D) | 3.5 | (X) |
| 99989 00 | Sales of products bought and resold without further manufacture, processing, or assembly at establishment | 38.4 | 19.1 | 68.9 | 119.6 | (X) |

## Table 5c-2. Industry-Product Analysis—Other Industries With Shipments of Primary Products: 1982

[Million dollars. Table is a continuation of table 5c-1 and shows where products of industries in this chapter (referred to as primary products and listed in table 6a) are made. To extent that some of primary products are made in industries not included in this chapter, value of such shipments is shown in "Other industries" column of table 5c-1. Specified "Other industries" are listed in this table if they account for more than $5 million of products primary to this chapter. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| 1982 product code | Other industries | Value |
|---|---|---|
| 3561- | **PUMPS AND PUMPING EQUIPMENT** | |
| | 3494 Valves and pipe fittings | 47.3 |
| | 3498 Fabricated pipe and fittings | (D) |
| | 3519 Internal combustion engines, n.e.c. | (D) |
| | 3523 Farm machinery and equipment | 20.0 |
| | 3531 Construction machinery | 7.4 |
| | 3532 Mining machinery | (D) |
| | 3533 Oil field machinery | 208.5 |
| | 3536 Hoists, cranes, and monorails | (D) |
| | 3541 Machine tools, metal cutting types | (D) |
| | 3546 Power driven hand tools | (D) |
| | 3547 Rolling mill machinery | (D) |
| | 3559 Special industry machinery, n.e.c. | 13.5 |
| | 3585 Refrigeration and heating equipment | 9.4 |
| | 3586 Measuring and dispensing pumps | 20.3 |
| | 3589 Service industry machinery, n.e.c. | 23.0 |
| | 3599 Machinery, except electrical, n.e.c. | 17.4 |
| | 3621 Motors and generators | (D) |
| | 3714 Motor vehicle parts and accessories | (D) |
| | 3764 Space propulsion units and parts | (D) |
| 3562- | **BALL AND ROLLER BEARINGS** | |
| | 3452 Bolts, nuts, rivets, and washers | (D) |
| 3563- | **AIR AND GAS COMPRESSORS** | |
| | 3423 Hand and edge tools, n.e.c. | (D) |
| | 3443 Fabricated plate work (boiler shops) | (D) |
| | 3511 Turbines and turbine generator sets | (D) |
| | 3519 Internal combustion engines, n.e.c. | (D) |
| | 3523 Farm machinery and equipment | (D) |
| | 3532 Mining machinery | (D) |
| | 3533 Oil field machinery | 14.8 |
| | 3535 Conveyors and conveying equipment | (D) |
| | 3585 Refrigeration and heating equipment | (D) |
| | 3621 Motors and generators | 5.3 |
| 3564- | **BLOWERS AND FANS** | |
| | 2819 Industrial inorganic chemicals, n.e.c. | (D) |
| | 3433 Heating equipment, except electric | (D) |
| | 3443 Fabricated plate work (boiler shops) | (D) |
| | 3444 Sheet metal work | 7.1 |
| | 3448 Prefabricated metal buildings | (D) |
| | 3494 Valves and pipe fittings | (D) |
| | 3555 Printing trades machinery | (D) |
| | 3559 Special industry machinery, n.e.c. | 17.7 |
| | 3585 Refrigeration and heating equipment | 16.0 |
| | 3621 Motors and generators | (D) |
| | 3842 Surgical appliances and supplies | (D) |

See footnotes at end of table.

## Table 5c-2. Industry-Product Analysis—Other Industries With Shipments of Primary Products: 1982—Con.

[Million dollars. Table is a continuation of table 5c-1 and shows where products of industries in this chapter (referred to as primary products and listed in table 6a) are made. To extent that some of primary products are made in industries not included in this chapter, value of such shipments is shown in "Other industries" column of table 5c-1. Specified "Other industries" are listed in this table if they account for more than $5 million of products primary to this chapter. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| 1982 product code | Other industries | Value | 1982 product code | Other industries | Value |
|---|---|---|---|---|---|
| **3565-** | **INDUSTRIAL PATTERNS** | | **3569-** | **GENERAL INDUSTRIAL MACHINERY, N.E.C.** | |
| | 3321 Gray iron foundries | 36.9 | | | |
| | 3322 Malleable iron foundries | 7.8 | | 2641 Paper coating and glazing | (D) |
| | 3325 Steel foundries, n.e.c. | 23.7 | | 2643 Bags, except textile bags | (D) |
| | 3361 Aluminum foundries | 31.7 | | 3433 Heating equipment, except electric | 5.1 |
| | 3544 Special dies, tools, jigs, and fixtures | 10.6 | | 3443 Fabricated plate work (boiler shops) | 43.9 |
| | 3599 Machinery, except electrical, n.e.c. | 5.4 | | 3444 Sheet metal work | (D) |
| **3566-** | **SPEED CHANGERS, DRIVES, AND GEARS** | | | | |
| | 3519 Internal combustion engines, n.e.c. | (D) | | 3469 Metal stampings, n.e.c. | (D) |
| | 3533 Oil field machinery | (D) | | 3494 Valves and pipe fittings | 35.7 |
| | 3559 Special industry machinery, n.e.c. | (D) | | 3535 Conveyors and conveying equipment | 28.5 |
| | 3621 Motors and generators | (D) | | 3536 Hoists, cranes, and monorails | 9.4 |
| **3567-** | **INDUSTRIAL FURNACES AND OVENS** | | | 3541 Machine tools, metal cutting types | 5.8 |
| | 3433 Heating equipment, except electric | 6.3 | | 3549 Metalworking machinery, n.e.c. | 6.3 |
| | 3536 Hoists, cranes, and monorails | (D) | | 3551 Food products machinery | 7.7 |
| | 3679 Electronic components, n.e.c. | (D) | | 3554 Paper industries machinery | 6.4 |
| **3568-** | **POWER TRANSMISSION EQUIPMENT, N.E.C.** | | | 3559 Special industry machinery, n.e.c. | 53.6 |
| | | | | 3585 Refrigeration and heating equipment | 19.3 |
| | 3489 Ordnance and accessories, n.e.c. | (D) | | | |
| | 3499 Fabricated metal products, n.e.c. | 8.7 | | 3599 Machinery, except electrical, n.e.c. | 15.2 |
| | 3533 Oil field machinery | (D) | | 3714 Motor vehicle parts and accessories | 14.7 |
| | 3535 Conveyors and conveying equipment | (D) | | 3728 Aircraft equipment, n.e.c. | (D) |
| | 3545 Machine tool accessories | (D) | | 3811 Engineering and scientific instruments | (D) |
| | 3592 Carburetors, pistons, rings, valves | (D) | | 3823 Process control instruments | (D) |
| | 3714 Motor vehicle parts and accessories | (D) | | 3999 Manufacturing industries, n.e.c. | (D) |

## Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

| 1982 product code | Product | 1982 | | | 1977 | | |
|---|---|---|---|---|---|---|---|
| | | Number of companies with shipments of $100,000 or more | Product shipments[1] | | Number of companies with shipments of $100,000 or more | Product shipments[1] | |
| | | | Quantity[2] | Value (million dollars) | | Quantity[2] | Value (million dollars) |
| | **PUMPS AND PUMPING EQUIPMENT** | | | | | | |
| 3561- — | **Total** | **(NA)** | **(X)** | **5 723.1** | **(NA)** | **(X)** | **3 522.8** |
| 35611 — | Industrial pumps, except fluid power pumps: | | | | | | |
| 35611 00 | Industrial pumps, except hydraulic fluid power pumps, automotive circulating pumps, and measuring and dispensing pumps (including the value of the driver if shipped as a complete unit): | | | | | | |
| | As reported in the census of manufactures | 181 | (X) | 1 916.9 | 149 | (X) | 1 386.7 |
| | As reported in the Current Industrial Report MA-35P, | | | | | | |
| | Pumps (Except Hydraulic) and Compressors | (NA) | (X) | 1 893.3 | (NA) | (X) | 1 374.7 |
| 35611 98 | Value of drivers reported separately | (NA) | (X) | 321.5 | (NA) | (X) | 244.5 |
| | Reciprocating pumps: | | | | | | |
| 35611 01 | Direct-acting steam-driven thousands | (NA) | 2.0 | 10.5 | (NA) | .8 | 3.3 |
| 35611 03 | Power-operated, other than steam do | (NA) | 228.1 | 137.0 | (NA) | 323.2 | 94.0 |
| | Turbine pumps, vertical (including deep-well): | | | | | | |
| 35611 05 | Submersible, more than 5 hp do | (NA) | 16.1 | 46.5 | (NA) | 20.4 | 57.0 |
| | Other than submersible: | | | | | | |
| 35611 09 | 16 in. diameter bowl size or less do | (NA) | 24.1 | 136.1 | (NA) | 25.9 | 97.5 |
| 35611 10 | More than 16 in. diameter bowl size do | (NA) | 2.7 | 34.1 | (NA) | 2.0 | 14.1 |
| | Centrifugal pumps: | | | | | | |
| | Submersible centrifugal pumps (except submersible sump pumps): | | | | | | |
| | Submersible effluent pumps (less than 1 in. solids handling capacity): | | | | | | |
| 35611 83 | .4 to 3/4 hp do | (NA) | 34.3 | 3.1 | (NA) | (3) | (3) |
| 35611 84 | 1 hp or more do | (NA) | 6.8 | 8.2 | (NA) | (3) | (3) |
| | Submersible solids handling pumps (solids 1 in. to 2 in. inclusive): | | | | | | |
| 35611 85 | 1/3 to 1/2 hp do | (NA) | 51.6 | 8.5 | (NA) | (3) | (3) |
| 35611 86 | 3/4 hp or more do | (NA) | 4.2 | 2.4 | (NA) | (3) | (3) |
| | Submersible nonclog pumps (greater than 2 inch solids handling capacity): | | | | | | |
| 35611 87 | 3 in. discharge outlet or less do | (NA) | 6.9 | 3.8 | (NA) | (3) | (3) |
| 35611 88 | 4 in. to 6 in. discharge outlet do | (NA) | 4.1 | 7.8 | (NA) | (3) | (3) |
| 35611 89 | 7 in. and 8 in. discharge outlet do | (NA) | .1 | .7 | (NA) | (3) | (3) |
| 35611 90 | 9 in. to 12 in. discharge outlet do | (NA) | .1 | 3.2 | (NA) | (3) | (3) |
| 35611 91 | More than 12 in. discharge outlet do | (NA) | | | | | |

See footnotes at end of table.

# Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

| 1982 product code | Product | 1982 | | | 1977 | | |
|---|---|---|---|---|---|---|---|
| | | Number of companies with shipments of $100,000 or more | Product shipments[1] | | Number of companies with shipments of $100,000 or more | Product shipments[1] | |
| | | | Quantity[2] | Value (million dollars) | | Quantity[2] | Value (million dollars) |
| | **PUMPS AND PUMPING EQUIPMENT**—Con. | | | | | | |
| 35611 — | Industrial pumps, except fluid power pumps—Con. | | | | | | |
| 35611 00 | Industrial pumps, except hydraulic fluid power pumps, automotive circulating pumps, and measuring and dispensing pumps (including the value of the driver if shipped as a complete unit)—Con. | | | | | | |
| | As reported in the Current Industrial Report MA-35P, Pumps (Except Hydraulic) and Compressors—Con. | | | | | | |
| | Centrifugal pumps—Con. | | | | | | |
| | Single stage, single suction, close coupled: | | | | | | |
| 35611 11 | 1/2 in. discharge outlet or less ---- thousands | (NA) | 14.1 | 1.8 | (NA) | 11.9 | 1.0 |
| 35611 12 | 3/4 in. and 1 in. discharge outlet ---- do | (NA) | 176.0 | 26.1 | (NA) | 119.1 | 16.2 |
| 35611 14 | 1-1/4 in. and 1-1/2 in. discharge outlet ---- do | (NA) | 386.6 | 46.2 | (NA) | 408.1 | 36.3 |
| 35611 15 | 2 in. and 2-1/2 in. discharge outlet ---- do | (NA) | 89.5 | 33.4 | (NA) | 104.5 | 27.6 |
| 35611 16 | 3 in. and 4 in. discharge outlet ---- do | (NA) | 30.5 | 30.2 | (NA) | 47.4 | 22.9 |
| 35611 19 | More than 4 in. discharge outlet ---- do | (NA) | 5.6 | 36.3 | (NA) | 6.5 | 21.9 |
| | Single stage, single suction, frame mounted: | | | | | | |
| 35611 21 | 1/2 in. discharge outlet or less ---- do | (NA) | 465.9 | 45.2 | (NA) | 400.0 | 28.0 |
| 35611 22 | 3/4 in. and 1 in. discharge outlet ---- do | (NA) | | | | | |
| 35611 23 | 1-1/4 in. and 1-1/2 in. discharge outlet ---- do | (NA) | 35.4 | 34.9 | (NA) | 41.6 | 26.6 |
| 35611 24 | 2 in. and 2-1/2 in. discharge outlet ---- do | (NA) | 35.8 | 40.2 | (NA) | 45.8 | 33.4 |
| 35611 25 | 3 in. discharge outlet ---- do | (NA) | 23.4 | 38.1 | (NA) | 28.3 | 30.4 |
| 35611 26 | 4 in. to 6 in. discharge outlet ---- do | (NA) | 22.5 | 73.1 | (NA) | 27.5 | 51.5 |
| 35611 29 | More than 6 in. discharge outlet ---- do | (NA) | 3.6 | 38.9 | (NA) | 5.7 | 39.2 |
| | Single stage, double suction: | | | | | | |
| 35611 42 | Less than 4 in. discharge outlet ---- do | (NA) | 10.7 | 18.0 | (NA) | 9.8 | 8.3 |
| 35611 44 | 4 in. and 5 in. discharge outlet ---- do | (NA) | 5.4 | 21.2 | (NA) | 5.8 | 12.3 |
| 35611 46 | 6 in. and 7 in. discharge outlet ---- do | (NA) | 3.1 | 17.2 | (NA) | 3.6 | 12.5 |
| 35611 48 | 8 in. and 12 in. discharge outlet ---- do | (NA) | 3.5 | 36.3 | (NA) | 3.8 | 21.9 |
| 35611 49 | More than 12 in. discharge outlet ---- do | (NA) | .7 | 51.9 | (NA) | .9 | 33.3 |
| | Multi-stage (single or double suction): | | | | | | |
| 35611 52 | 1-1/2 in. discharge outlet or less ---- do | (NA) | 29.1 | 13.5 | (NA) | 37.8 | 9.1 |
| 35611 54 | 2 in. and 3 in. discharge outlet ---- do | (NA) | 2.3 | 57.3 | (NA) | 2.1 | 34.8 |
| 35611 56 | 4 in. and 5 in. discharge outlet ---- do | (NA) | 5.8 | 48.8 | (NA) | 1.0 | 27.5 |
| 35611 58 | 6 in. and 7 in. discharge outlet ---- do | (NA) | .4 | 22.5 | (NA) | .3 | 16.3 |
| 35611 59 | 8 in. or more discharge outlet ---- do | (NA) | .8 | 29.1 | (NA) | .4 | 24.8 |
| | Propeller and mixed flow: | | | | | | |
| 35611 62 | 20 in. or less ---- do | (NA) | 3.8 | 26.2 | (NA) | 3.1 | 11.5 |
| 35611 64 | More than 20 in. ---- do | (NA) | 1.9 | 30.1 | (NA) | 1.7 | 38.8 |
| | All other centrifugal pumps (including can, etc.): | | | | | | |
| 35611 65 | 1-1/2 in. discharge outlet or less ---- do | (NA) | 955.8 | 32.3 | (NA) | 889.2 | 27.1 |
| 35611 66 | 2 in. to 6 in. discharge outlet ---- do | (NA) | 71.1 | 43.9 | (NA) | 76.4 | 36.9 |
| 35611 69 | More than 6 in. discharge outlet ---- do | (NA) | 2.8 | 72.7 | (NA) | 6.2 | 77.1 |
| | Rotary pumps: | | | | | | |
| | 100 p.s.i. or less, designed pressure: | | | | | | |
| 35611 70 | 10 g.p.m. or less, designed capacity ---- do | (NA) | 483.5 | 23.9 | (NA) | 622.9 | 20.1 |
| 35611 71 | 11 to 99 g.p.m., designed capacity ---- do | (NA) | 162.1 | 25.3 | (NA) | 160.6 | 17.6 |
| 35611 72 | 100 to 299 g.p.m., designed capacity ---- do | (NA) | 4.1 | 5.3 | (NA) | 63.8 | 7.0 |
| 35611 73 | 300 g.p.m. or more, designed capacity ---- do | (NA) | 2.2 | 4.9 | (NA) | 2.7 | 3.8 |
| | 101 to 250 p.s.i., designed pressure: | | | | | | |
| 35611 74 | 10 g.p.m. or less, designed capacity ---- do | (NA) | 97.4 | 11.5 | (NA) | 157.7 | 9.6 |
| 35611 75 | 11 to 99 g.p.m., designed capacity ---- do | (NA) | 44.3 | 26.8 | (NA) | 47.0 | 15.2 |
| 35611 76 | 100 g.p.m. or more, designed capacity ---- do | (NA) | 14.4 | 20.0 | (NA) | 16.6 | 13.7 |
| | 251 to 500 p.s.i., designed pressure: | | | | | | |
| 35611 77 | 10 g.p.m. or less, designed capacity ---- do | (NA) | 82.6 | 20.9 | (NA) | 70.7 | 3.1 |
| 35611 78 | 11 g.p.m. or more, designed capacity ---- do | (NA) | | | (NA) | 15.2 | 7.9 |
| 35611 79 | More than 500 p.s.i., designed pressure ---- do | (NA) | 2.5 | 9.8 | (NA) | 6.0 | 8.4 |
| 35611 81 | Diaphragm pumps, all sizes ---- do | (NA) | 110.9 | 24.2 | (NA) | 84.3 | 31.1 |
| 35611 97 | Other industrial pumps ---- do | (NA) | 66.4 | 32.5 | | | |
| 35613 — | Domestic water systems: | | | | | | |
| 35613 00 | Domestic water systems (pumps for farm and home use), excluding irrigation pumps (including the value of the driver if shipped as a complete unit): | | | | | | |
| | As reported in the census of manufactures ---- | 37 | (X) | 215.5 | 39 | (X) | 223.8 |
| | As reported in the Current Industrial Report MA-35P, Pumps (Except Hydraulic) and Compressors ---- | (NA) | (X) | 234.5 | (NA) | (X) | 207.5 |
| 35613 13 | Jet pump and convertible jet pump systems ---- thousands | (NA) | 524.5 | 73.4 | (NA) | 620.7 | 75.3 |
| 35613 20 | Nonjet pump systems (except submersible) ---- do | (NA) | 169.5 | 18.4 | (NA) | 16.2 | 2.2 |
| 35613 25 | Submersible pump systems, 5 hp or less ---- do | (NA) | 619.2 | 140.9 | (NA) | 728.3 | 126.8 |
| 35613 70 | Domestic hand and windmill pumps, pump jacks, and cylinders (sold separately) ---- do | (NA) | 18.4 | 1.8 | (NA) | 44.6 | 3.2 |
| 35615 — | Pumps, n.e.c. ---- | (NA) | (X) | 1 048.2 | (NA) | (X) | 395.7 |
| 35615 30 | Domestic sump pumps (1 hp or less) (including the value of the driver if shipped as a complete unit): | | | | | | |
| | As reported in the census of manufactures ---- | 32 | (X) | 86.2 | (NA) | (X) | (4) |
| | As reported in the Current Industrial Report MA-35P, Pumps (Except Hydraulic) and Compressors ---- | (NA) | (X) | 59.8 | (NA) | 1 159.7 | 50.0 |
| 35615 73 | Pedestal ---- thousands | (NA) | 206.9 | 11.4 | (NA) | 394.8 | 15.5 |
| | Submersible: | | | | | | |
| 35615 77 | 1/3 hp or less ---- do | (NA) | 705.9 | 41.4 | (NA) | 764.9 | 34.5 |
| 35615 78 | More than 1/3 hp ---- do | (NA) | 71.3 | 7.0 | | | |
| 35615 10 | Oil-well and oil-field pumps, except boiler feed (including the value of the driver if shipped as a complete unit): | | | | | | |
| | As reported in the census of manufactures ---- | 42 | (X) | 760.0 | (NA) | (X) | (4) |
| | As reported in the Current Industrial Report MA-35P, Pumps (Except Hydraulic) and Compressors ---- | (NA) | (X) | 750.1 | (NA) | 144.7 | 192.6 |
| 35615 11 | Subsurface pumps for oil-well pumping ---- thousands | (NA) | 339.0 | 473.4 | (NA) | 133.9 | 99.0 |
| 35615 13 | Mud pumps (slush) ---- do | (NA) | 2.6 | 193.7 | (NA) | 1.4 | 52.8 |
| 35615 15 | Other oil-well and oil-field pumps ---- do | (NA) | 18.9 | 83.0 | (NA) | 9.4 | 40.8 |

See footnotes at end of table.

# Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

| 1982 product code | Product | 1982 | | | 1977 | | |
|---|---|---|---|---|---|---|---|
| | | Number of companies with shipments of $100,000 or more | Product shipments[1] | | Number of companies with shipments of $100,000 or more | Product shipments[1] | |
| | | | Quantity[2] | Value (million dollars) | | Quantity[2] | Value (million dollars) |
| | **PUMPS AND PUMPING EQUIPMENT**—Con. | | | | | | |
| 35615 — | Pumps, n.e.c. —Con. | | | | | | |
| 35615 20 | Other pumps (including the value of the driver if shipped as a complete unit), except automotive circulating pumps and measuring and dispensing pumps; including hot water heating circulator pumps, oil burner and appliance pumps, fire engine pumps, laboratory pumps, etc.): | | | | | | |
| | As reported in the census of manufactures | 64 | (X) | 202.0 | (NA) | (X) | [4]391.2 |
| | As reported in the Current Industrial Report MA-35P, Pumps (Except Hydraulic) and Compressors | (NA) | (X) | 123.2 | (NA) | (X) | 92.9 |
| 35615 95 | Hot water heating circulator pumps — thousands | (NA) | | | | | |
| 35615 97 | Other pumps (except automotive), including oil burner and appliance pumps, fire engine pumps, laboratory pumps, etc. — do | (NA) | 3 060.3 | 123.2 | (NA) | 3 020.4 | 92.9 |
| 35615 98 | Value of drivers shipped separately | (NA) | (X) | 69.0 | (NA) | (X) | 35.9 |
| 35615 00 | Pumps, n.e.c., n.s.k. | (NA) | (X) | 2.3 | (NA) | (X) | 4.5 |
| 35617 — | Hydraulic fluid power pumps, motors, and hydrostatic transmission components (except aerospace): | | | | | | |
| 35617 00 | Hydraulic fluid power pumps, motors, and hydrostatic transmission components (except aerospace): | | | | | | |
| | As reported in the census of manufactures | 91 | (X) | 648.5 | 54 | (X) | 488.9 |
| | As reported in the Current Industrial Report MA-35N, Fluid Power Products (Including Aerospace) | (NA) | (X) | 583.8 | (NA) | (X) | 485.5 |
| | Pumps, variable displacement closed loop hydrostatic transmission type: | | | | | | |
| 35617 01 | Vane type — thousands | (NA) | | | | | |
| 35617 62 | Radial piston type — do | (NA) | 29.3 | 5.7 | (NA) | (5) | (5) |
| 35617 63 | Axial piston type — do | (NA) | 114.2 | 67.7 | (NA) | (5) | (5) |
| | Pumps, fixed displacement, open and closed loop: | | | | | | |
| 35617 21 | Internal gear type (including gerotor) — do | (NA) | 485.0 | 60.0 | (NA) | (5) | (5) |
| 35617 22 | External gear type — do | (NA) | 1 394.3 | 84.7 | (NA) | (5) | (5) |
| 35617 23 | Vane type — do | (NA) | | | | | |
| 35617 24 | Radial piston type — do | (NA) | 184.8 | 40.6 | (NA) | (5) | (5) |
| 35617 25 | Axial piston type — do | (NA) | 98.1 | 40.0 | (NA) | (5) | (5) |
| | Pumps, variable displacement, open loop only: | | | | | | |
| 35617 31 | Vane type — do | (NA) | 25.1 | 8.7 | (NA) | (5) | (5) |
| 35617 32 | Radial piston type — do | (NA) | 60.0 | 19.3 | (NA) | (5) | (5) |
| 35617 33 | Axial piston type — do | (NA) | 84.0 | 39.4 | (NA) | (5) | (5) |
| 35617 39 | Other pump types, n.e.c. — do | (NA) | 258.1 | 53.7 | (NA) | (5) | (5) |
| 35617 96 | Value of pump drivers for pumps shipped separately | (NA) | (X) | 12.9 | (NA) | (X) | (5) |
| | Motors (continuous rotation): | | | | | | |
| 35617 41 | Gear type, internal and external (including gerotor) — thousands | (NA) | 454.9 | 52.5 | (NA) | (5) | (5) |
| 35617 42 | Vane type, fixed and variable — do | (NA) | 36.6 | 16.0 | (NA) | (5) | (5) |
| 35617 43 | Radial piston type, fixed and variable — do | (NA) | 34.3 | 20.7 | (NA) | (5) | (5) |
| | Axial piston type: | | | | | | |
| 35617 44 | Fixed displacement — do | (NA) | 120.5 | 39.4 | (NA) | (5) | (5) |
| 35617 45 | Variable displacement — do | (NA) | 19.6 | 16.6 | (NA) | (5) | (5) |
| 35617 46 | Motor type, n.e.c. — do | (NA) | 1.0 | .7 | (NA) | (5) | (5) |
| 35617 49 | Controls for pumps, motors and transmissions, shipped separately, includes actuators and electronic actuator control packages — do | (NA) | 259.8 | 5.0 | (NA) | (5) | (5) |
| 35618 — | Aerospace-type hydraulic fluid power pumps and motors (excluding integral hydrostatic transmissions and constant speed drives): | | | | | | |
| 35618 00 | Aerospace-type hydraulic fluid power pumps and motors (excluding integral hydrostatic transmissions and constant speed drives): | | | | | | |
| | As reported in the census of manufactures | 12 | (X) | 81.3 | (5) | (X) | (5) |
| | As reported in the Current Industrial Report MA-35N, Fluid Power Products (Including Aerospace) | (NA) | (X) | 78.7 | (NA) | (X) | (5) |
| 35618 51 | Hydraulic pumps, fixed and variable displacement types — thousands | (NA) | | | | | |
| 35618 52 | Hydraulic pump/electric motor assemblies, fixed and variable displacement types — do | (NA) | 32.5 | 60.0 | (NA) | (5) | (5) |
| 35618 53 | Other hydraulic pump packages, n.e.c. — do | (NA) | | | | | |
| 35618 54 | Hydraulic motors, fixed and variable displacement types — do | (NA) | | | | | |
| 35618 55 | Hydraulic motor packages, including motor/gearbox, motor/valve, motor/generator, and similar combinations units — do | (NA) | 7.2 | 18.7 | (NA) | (5) | (5) |
| 3561A — | Parts and attachments for hydraulic fluid power pumps, motors and hydrostatic transmissions, sold separately, except aerospace: | | | | | | |
| 3561A 00 | Parts and attachments for hydraulic fluid power pumps, motors and hydrostatic transmissions, sold separately, except aerospace: | | | | | | |
| | As reported in the census of manufactures | 38 | (X) | 218.6 | (NA) | (X) | (6) |
| | As reported in the Current Industrial Report MA-35N, Fluid Power Products (Including Aerospace) | (NA) | (X) | 199.3 | (NA) | (X) | (NA) |
| 3561B — | Parts and attachments for aerospace-type hydraulic fluid power pumps and motors, sold separately: | | | | | | |
| 3561B 00 | Parts and attachments for aerospace-type hydraulic fluid power pumps and motors, sold separately: | | | | | | |
| | As reported in the census of manufactures | 9 | (X) | 103.8 | (NA) | (X) | (6) |
| | As reported in the Current Industrial Report MA-35N, Fluid Power Products (Including Aerospace) | (NA) | (X) | 84.8 | (NA) | (X) | (NA) |

See footnotes at end of table.

# Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

| 1982 product code | Product | 1982 | | | 1977 | | |
|---|---|---|---|---|---|---|---|
| | | Number of companies with shipments of $100,000 or more | Product shipments[1] | | Number of companies with shipments of $100,000 or more | Product shipments[1] | |
| | | | Quantity[2] | Value (million dollars) | | Quantity[2] | Value (million dollars) |
| | **PUMPS AND PUMPING EQUIPMENT**—Con. | | | | | | |
| 3561C — | Parts and attachments for pumps and pumping equipment, except for hydraulic fluid power: | | | | | | |
| 3561C 00 | Parts and attachments for pumps and pumping equipment, except for hydraulic fluid power | 134 | (X) | 1 298.9 | 132 | (X) | [6]861.6 |
| 35610 00 | Pumps and pumping equipment, n.s.k., typically for establishments with 10 employees or more (see note) | (NA) | (X) | 129.2 | (NA) | (X) | 87.0 |
| 35610 02 | Pumps and pumping equipment, n.s.k., typically for establishments with less than 10 employees (see note) | (NA) | (X) | 62.2 | (NA) | (X) | 79.1 |
| | **BALL AND ROLLER BEARINGS** | | | | | | |
| 3562- — | **Total** | (NA) | (X) | 2 973.1 | (NA) | (X) | 2 444.5 |
| 35621 — | Ball bearings, unmounted: | | | | | | |
| 35621 00 | Ball bearings, unmounted: | | | | | | |
| | As reported in the census of manufactures | 51 | (X) | 1 087.1 | (NA) | (X) | 749.9 |
| | As reported on the Current Industrial Report MA-35Q, Antifriction Bearings | (NA) | (X) | 1 071.0 | [7] | [7] | [7] |
| | Angular, including self-aligning: | | | | | | |
| | Ground or precision: | | | | | | |
| | Single row conrad: | | | | | | |
| | Miniature (below 9mm. O.D.): | | | | | | |
| 35621 01 | Regular (ABEC 1 and 3) — millions | (NA) | (D) | (D) | 4 | (S) | 4.7 |
| 35621 02 | Precision (ABEC 5 and up) — do | (NA) | 3.0 | 10.5 | 4 | 2.8 | 7.2 |
| | Other regular: | | | | | | |
| 35621 03 | 9 mm. O.D. thru 30 mm. O.D. — do | (NA) | 45.5 | 72.3 | 13 | 39.6 | 56.3 |
| 35621 04 | Over 30 mm. O.D. thru 52 mm. O.D. — do | (NA) | 57.7 | 105.0 | 19 | 96.3 | 138.6 |
| 35621 05 | Over 52 mm. O.D. thru 100 mm. O.D. — do | (NA) | 18.4 | 110.3 | 16 | 31.0 | 126.9 |
| 35621 07 | Over 100 mm. O.D. — do | (NA) | 2.6 | 108.0 | 15 | 3.7 | 86.5 |
| | Other precision (ABEC 5 and up): | | | | | | |
| 35621 09 | 9 mm. O.D. thru 30 mm. O.D. — do | (NA) | 5.1 | 26.3 | 6 | 3.7 | 12.0 |
| 35621 11 | Over 30 mm. O.D. thru 52 mm. O.D. — do | (NA) | .5 | 22.6 | 5 | 1.6 | 7.9 |
| 35621 12 | Over 52 mm. O.D. thru 100 mm. O.D. — do | (NA) | .3 | 27.4 | 6 | 1.1 | 10.6 |
| 35621 13 | Over 100 mm. O.D. — do | (NA) | .3 | 46.2 | 6 | .7 | 17.4 |
| 35621 14 | Single row maximum capacity type — do | (NA) | 2.0 | 23.8 | 6 | 3.5 | 25.1 |
| | Integral shaft and integral spindle ball bearings: | | | | | | |
| 35621 15 | Not over 30 mm. O.D. — do | (NA) | 4.5 | 10.4 | 4 | 10.5 | 34.2 |
| 35621 17 | Over 30 mm. O.D. — do | (NA) | (D) | (D) | 2 | | |
| 35621 16 | Double row — do | (NA) | 7.3 | 66.9 | 6 | 12.5 | 60.8 |
| 35621 18 | Angular contact — do | (NA) | 3.6 | 55.2 | 8 | 4.6 | 38.4 |
| 35621 21 | All other ground or precision bearings, (ABEC 1 and up) — do | (NA) | (D) | (D) | 6 | 4.2 | 28.5 |
| 35621 23 | Ground bearings of less than ABEC 1 precision — do | (NA) | 6.5 | 23.0 | (NA) | (NA) | (NA) |
| 35621 25 | Unground, including self-aligning (less than ABEC 1) — do | (NA) | 94.5 | 44.5 | 7 | 91.5 | 26.6 |
| | Thrust ball bearings: | | | | | | |
| 35621 33 | Ground — do | (NA) | 8.4 | 45.5 | 13 | 6.0 | 27.3 |
| 35621 35 | Unground — do | (NA) | 2.8 | 5.1 | 5 | (S) | 5.9 |
| 35621 51 | Other ball bearings — do | (NA) | 10.6 | 54.6 | 11 | 21.0 | 31.9 |
| 35621 0A | Ball bearings, unmounted, n.s.k. | (NA) | (X) | - | (NA) | (X) | 3.1 |
| 35622 — | Tapered roller bearings, unmounted: | | | | | | |
| 35622 00 | Tapered roller bearings, unmounted: | | | | | | |
| | As reported in the census of manufactures | 16 | (X) | 710.9 | 14 | *128.5 | 748.6 |
| | As reported on the Current Industrial Report MA-35Q, Antifriction Bearings | (NA) | (X) | 695.3 | [7] | [7] | [7] |
| 35622 32 | Cup and cone assemblies shipped as a set — millions | (NA) | 11.8 | 194.8 | | | |
| 35622 33 | Cups shipped separately — do | (NA) | 88.5 | 162.1 | 14 | *128.5 | 748.6 |
| 35622 34 | Cone assemblies shipped separately — do | (NA) | 86.5 | 338.4 | | | |
| 35623 — | Roller bearings, except tapered, unmounted: | | | | | | |
| 35623 00 | Roller bearings, except tapered, unmounted: | | | | | | |
| | As reported in the census of manufactures | 34 | (X) | 614.1 | (NA) | (X) | 472.9 |
| | As reported on the Current Industrial Report MA-35Q, Antifriction Bearings | (NA) | (X) | 594.9 | [7] | [7] | [7] |
| | Cylindrical roller bearings: | | | | | | |
| 35623 11 | Regular (ABEC 1 and 3) — millions | (NA) | 21.5 | 167.5 | 20 | 19.9 | 162.6 |
| 35623 12 | Precision (ABEC 5 and up) — do | (NA) | .3 | 72.7 | 7 | .2 | 24.1 |
| | Spherical roller bearings, including hourglass and barrel: | | | | | | |
| 35623 24 | Single row — do | (NA) | .3 | 15.2 | 8 | 2.6 | 24.0 |
| 35623 25 | Double row — do | (NA) | .8 | 108.5 | 6 | .8 | 77.9 |
| 35623 41 | Needle roller bearings — do | (NA) | 288.5 | 186.2 | 7 | (S) | 132.4 |
| 35623 93 | All other roller bearings not listed above — do | (NA) | 9.8 | 44.8 | 14 | 8.6 | 48.8 |
| 35623 0A | Roller bearings, except tapered, unmounted, n.s.k. | (NA) | (X) | - | (NA) | (X) | 3.1 |
| 35624 — | Mounted bearings, except plain: | | | | | | |
| 35624 00 | Mounted bearings, except plain: | | | | | | |
| | As reported in the census of manufactures | 17 | (X) | 241.7 | (NA) | (X) | 213.1 |
| | As reported on the Current Industrial Report MA-35Q, Antifriction Bearings | (NA) | (X) | 239.9 | [7] | [7] | [7] |
| 35624 17 | Ball bearings, unit and/or split mounted — millions | (NA) | 8.0 | 130.4 | 14 | *17.2 | 120.1 |
| | Roller: | | | | | | |
| 35624 53 | Unit mounted — do | (NA) | .9 | 86.5 | 10 | (S) | 75.3 |
| 35624 55 | Split mounted — do | (NA) | .1 | 23.0 | 4 | .1 | 15.8 |
| 35624 0A | Mounted bearings, except plain, n.s.k. | (NA) | (X) | - | (NA) | (X) | 1.9 |

See footnotes at end of table.

# Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

| 1982 product code | Product | 1982 | | | 1977 | | |
|---|---|---|---|---|---|---|---|
| | | Number of companies with shipments of $100,000 or more | Product shipments[1] | | Number of companies with shipments of $100,000 or more | Product shipments[1] | |
| | | | Quantity[2] | Value (million dollars) | | Quantity[2] | Value (million dollars) |
| | **BALL AND ROLLER BEARINGS**—Con. | | | | | | |
| 35629 — | Parts for ball and roller bearings, except cups and cones: | | | | | | |
| 35629 00 | Parts for ball and roller bearings, except cups and cones: | | | | | | |
| | As reported in the census of manufactures | 45 | (X) | 298.4 | (NA) | (X) | 243.1 |
| | As reported on the Current Industrial Report MA-35Q, | | | | | | |
| | Antifriction Bearings | (NA) | (X) | 290.1 | (7) | (7) | (7) |
| 35629 35 | Parts (except rollers) for tapered roller bearings | (NA) | (X) | (8) | (8) | (X) | (8) |
| | Parts for ball and roller (except tapered) bearings, including balls and rollers, sold separately: | | | | | | |
| 35629 11 | Balls — millions | (NA) | 10 731.9 | 67.0 | 11 | 15.1 | 43.5 |
| 35629 21 | Other antifriction ball bearing parts, including unassembled ball bearings, cages, housing closures, collars, races, etc. | (NA) | (X) | 21.1 | 14 | (X) | 27.0 |
| 35629 31 | Rollers — millions | (NA) | 5 073.4 | 43.6 | 10 | 19.5 | 66.7 |
| 35629 41 | Other antifriction roller bearing parts, including unassembled roller bearings, cages, housing closures, collars, races, etc. | (NA) | (X) | 8158.4 | 819 | (X) | 8105.4 |
| 35629 0A | Parts for ball and roller bearings, n.s.k. | (NA) | (X) | ~ | (NA) | (X) | .5 |
| 35620 00 | Ball and roller bearings, n.s.k., typically for establishments with 20 employees or more (see note) | (NA) | (X) | 4.8 | (NA) | (X) | 10.7 |
| 35620 02 | Ball and roller bearings, n.s.k., typically for establishments with less than 20 employees (see note) | (NA) | (X) | 16.1 | (NA) | (X) | 6.1 |
| | **AIR AND GAS COMPRESSORS** | | | | | | |
| 3563– — | **Total** | **(NA)** | **(X)** | **2 846.2** | **(NA)** | **(X)** | **1 923.4** |
| 35631 — | Air and gas compressors and vacuum pumps | (NA) | (X) | 1 677.1 | (NA) | (X) | 1 290.3 |
| 35631 30 | Air and gas compressors (including value of the driver if shipped as a complete unit), except compressors for icemaking machinery, refrigeration equipment, air conditioning equipment, and pneumatic air motors: | | | | | | |
| | As reported in the census of manufactures | 71 | (X) | 1 368.1 | 89 | (X) | 1 277.1 |
| | As reported in the Current Industrial Report MA-35P, | | | | | | |
| | Pumps (Except Hydraulic) and Compressors | (NA) | (X) | 1 399.8 | (NA) | (NA) | (NA) |
| 35631 98 | Value of drivers sold separately | (NA) | (X) | 213.8 | (NA) | (X) | 199.0 |
| | Air compressors, stationary: | | | | | | |
| | Reciprocating, single acting: | | | | | | |
| 35631 01 | 1-1/2 hp or less — thousands | (NA) | 752.6 | 40.8 | (NA) | 139.4 | 21.1 |
| 35631 02 | More than 1-1/2 hp to 5 hp — do | (NA) | 73.5 | 48.0 | (NA) | 97.8 | 37.7 |
| 35631 03 | 6 hp to 25 hp — do | (NA) | 28.8 | 53.4 | (NA) | 29.6 | 41.4 |
| 35631 04 | 26 hp or more — do | (NA) | 2.3 | 20.1 | (NA) | 4.4 | 21.9 |
| | Reciprocating, double acting: | | | | | | |
| 35631 05 | 150 hp or less — do | (NA) | 3.1 | 42.0 | (NA) | 6.6 | 31.6 |
| 35631 06 | 151 hp or more — do | (NA) | .4 | 15.8 | (NA) | .5 | 17.2 |
| | Rotary positive: | | | | | | |
| 35631 07 | Discharge pressures 50 PSIG or less, all hp sizes — do | (NA) | 101.3 | 25.0 | (NA) | 81.9 | 23.4 |
| | Discharge pressures 51 PSIG or more: | | | | | | |
| 35631 08 | 150 hp or less — do | (NA) | 13.0 | 88.4 | (NA) | 10.3 | 66.8 |
| 35631 09 | 151 hp or more — do | (NA) | 1.0 | 29.1 | (NA) | .7 | 15.5 |
| | Centrifugal and axial: | | | | | | |
| 35631 14 | 50 PSIG or less — do | (NA) | .3 | 14.2 | (NA) | .1 | 16.6 |
| | 51 PSIG or more: | | | | | | |
| 35631 17 | 350 hp or less — do | (NA) | .6 | 96.1 | (NA) | .5 | 63.9 |
| 35631 19 | 351 hp or more — do | (NA) | | | | | |
| | Portable air compressors: | | | | | | |
| 35631 29 | Less than 11 c.f.m. — do | (NA) | 663.2 | 53.4 | (NA) | 849.9 | 78.9 |
| 35631 33 | 11 to 74 c.f.m. — do | (NA) | 13.8 | 8.1 | | | |
| 35631 34 | 75 to 124 c.f.m. — do | (NA) | 2.1 | 11.3 | (NA) | 4.1 | 13.4 |
| 35631 36 | 125 to 249 c.f.m. — do | (NA) | 5.7 | 37.3 | (NA) | 8.7 | 43.7 |
| 35631 37 | 250 to 599 c.f.m. — do | (NA) | 1.3 | 16.1 | (NA) | 1.5 | 16.5 |
| 35631 38 | 600 to 899 c.f.m. — do | (NA) | 1.2 | 26.5 | (NA) | 2.0 | 43.3 |
| 35631 39 | 900 c.f.m. or more — do | (NA) | .4 | 17.5 | (NA) | .5 | 16.9 |
| | Gas compressors: | | | | | | |
| | Stationary, centrifugal and axial: | | | | | | |
| 35631 42 | Natural gas — do | (NA) | .1 | 82.8 | (NA) | .4 | 109.3 |
| 35631 43 | All other gases — do | (NA) | .3 | 58.6 | (NA) | .2 | 69.8 |
| | Reciprocating and rotary: | | | | | | |
| | Stationary reciprocating: | | | | | | |
| | Integral engines: | | | | | | |
| 35631 46 | 2,000 hp or less — do | (NA) | 3.7 | 138.8 | (NA) | .6 | 74.2 |
| 35631 47 | 2,001 to 4,000 hp — do | (NA) | | | | | |
| 35631 48 | 4,001 hp or more — do | (NA) | | | | | |
| | Other than integral engines: | | | | | | |
| 35631 51 | 1,000 hp or less — do | (NA) | 6.6 | 101.4 | (NA) | 3.3 | 59.0 |
| 35631 53 | 1,001 hp or more — do | (NA) | .4 | 97.7 | (NA) | .1 | 34.5 |
| 35631 56 | Stationary rotary positive — do | (NA) | .2 | 5.3 | (NA) | .1 | 3.7 |
| 35631 89 | Other compressors | (NA) | 14.8 | 58.5 | (NA) | 101.8 | 11.4 |
| 35631 40 | Pneumatic air motors: | | | | | | |
| | As reported in the census of manufactures | 11 | (X) | 46.4 | (NA) | (NA) | (NA) |
| | As reported in the Current Industrial Report MA-35N, | | | | | | |
| | Fluid Power Products (Including Aerospace) | (NA) | (X) | 42.2 | (NA) | (X) | 36.8 |
| 35631 82 | Pneumatic (air) motors, continuous rotation (including parts), except aerospace | (NA) | (S) | 42.2 | (NA) | 369.7 | 36.8 |
| 35631 85 | Pneumatic motors and motor packages (including parts), aerospace | (NA) | | | | | |

See footnotes at end of table.

# Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

| 1982 product code | Product | 1982 | | | 1977 | | |
|---|---|---|---|---|---|---|---|
| | | Number of companies with shipments of $100,000 or more | Product shipments[1] | | Number of companies with shipments of $100,000 or more | Product shipments[1] | |
| | | | Quantity[2] | Value (million dollars) | | Quantity[2] | Value (million dollars) |
| | **AIR AND GAS COMPRESSORS**—Con. | | | | | | |
| 35631 — | Air and gas compressors and vacuum pumps —Con. | | | | | | |
| 35631 20 | Vacuum pumps (compressors) (including value of the driver if shipped as a complete unit), except laboratory: | | | | | | |
| | As reported in the census of manufactures | 28 | (X) | 205.1 | (NA) | (NA) | (NA) |
| | As reported in the Current Industrial Report MA-35P, Pumps (Except Hydraulic) and Compressors | (NA) | (X) | 204.7 | (NA) | 217.0 | 86.9 |
| 35631 93 | Low vacuum, 29.5 in. mercury vacuum or less — thousands | (NA) | 257.2 | 114.0 | (NA) | 150.7 | 48.3 |
| 35631 94 | High vacuum, 29.6 in. mercury vacuum or more — do | (NA) | 73.6 | 90.7 | (NA) | 66.3 | 38.6 |
| 35631 00 | Air and gas compressors, n.s.k. | (NA) | (X) | 57.5 | (NA) | (X) | 13.2 |
| 35632 — | Parts and attachments for air and gas compressors, except refrigeration compressors: | | | | | | |
| 35632 00 | Parts and attachments for air and gas compressors, except refrigeration compressors | 52 | (X) | 652.7 | 41 | (X) | 384.1 |
| 35635 — | Industrial spraying equipment | (NA) | (X) | 442.0 | (NA) | (X) | 221.6 |
| 35635 31 | Power paint spraying outfits and other liquid power sprayers, except agricultural — thousands | 41 | (S) | 436.0 | 27 | (S) | 221.6 |
| 35635 51 | Hand sprayers, except agricultural — do | 9 | | | | | |
| 35635 00 | Industrial spraying equipment, n.s.k. | (NA) | (X) | 6.0 | (NA) | (X) | - |
| 35630 00 | Air and gas compressors, n.s.k., typically for establishments with 10 employees or more (see note) | (NA) | (X) | 35.6 | (NA) | (X) | 15.9 |
| 35630 02 | Air and gas compressors, n.s.k., typically for establishments with less than 10 employees (see note) | (NA) | (X) | 38.8 | (NA) | (X) | 11.5 |

| 1982 product code | Product | 1982 | | | | 1977 | | |
|---|---|---|---|---|---|---|---|---|
| | | Number of companies with shipments of $100,000 or more | Product shipments[1] | | | Number of companies with shipments of $100,000 or more | Product shipments | |
| | | | Quantity[2] | Value (million dollars) | Value of drivers (million dollars) | | Quantity[2] | Value (million dollars) |
| | **BLOWERS AND FANS** | | | | | | | |
| 3564- — | **Total** | (NA) | (X) | 1 994.5 | (X) | (NA) | (X) | 1 422.3 |
| 35643 — | Centrifugal fans and blowers | (NA) | (X) | 556.9 | (X) | (NA) | (X) | 354.1 |
| 35643 17 | Blower-filter units — thousands | 10 | **32.5 | 24.0 | (D) | 10 | (S) | 18.2 |
| 35643 19 | Classes I and II fans (more than 1-1/2 in. to 6-3/4 in. maximum total pressure) — do | 33 | (S) | 62.5 | .4 | 27 | (S) | 58.0 |
| 35643 21 | Classes III and IV fans (more than 6-3/4 in. maximum total pressure) — do | 23 | (S) | 88.7 | (D) | 14 | (S) | 23.9 |
| 35643 23 | Furnace and lightweight air-conditioning blowers — do | 10 | | | | 6 | (S) | 38.9 |
| 35643 24 | Industrial fans, excluding blowers, turbo-blowers, and multistage blowers — do | 34 | (S) | 156.2 | .3 | 31 | (S) | 127.5 |
| 35643 27 | Positive displacement blowers (excluding turbo-blowers) — do | 14 | *42.5 | 103.9 | (D) | 6 | (S) | 40.8 |
| 35643 28 | Turbo-blowers (single stage, single and double inlet) — do | 10 | (S) | 16.8 | (D) | 9 | **7.0 | 9.1 |
| 35643 29 | Multistage blowers — do | 9 | 11.0 | 46.6 | (D) | 4 | (S) | 11.9 |
| 35643 31 | Small housed blowers (utility sets) — do | 15 | *312.6 | 51.6 | (D) | 11 | (S) | 17.7 |
| 35643 00 | Centrifugal fans and blowers, n.s.k. | (NA) | (X) | 6.6 | (X) | (NA) | (X) | 8.1 |
| 35644 — | Propeller fans and accessories, axial fans, and power roof ventilators | (NA) | (X) | 464.8 | (X) | (NA) | (X) | 303.3 |
| | Axial fans: | | | | | | | |
| 35644 13 | Directly connected to driver — thousands | 21 | 180.2 | 113.7 | (D) | 20 | (S) | 68.8 |
| 35644 15 | Belt-driven — do | 21 | (S) | 31.6 | .7 | 19 | (S) | 21.2 |
| | Propeller fans and accessories: | | | | | | | |
| | Industrial: | | | | | | | |
| 35644 33 | Directly connected to driver — do | 15 | (S) | 25.2 | (D) | 20 | (S) | 48.6 |
| 35644 35 | Belt-driven — do | 17 | (S) | 42.2 | (D) | 15 | (S) | 27.9 |
| 35644 37 | Penthouses, shutters, guards, and other accessories | 18 | (X) | 29.7 | (X) | 11 | (X) | 15.7 |
| 35644 39 | Parts for fans and blowers | 29 | (X) | 71.3 | (X) | 26 | (X) | 55.7 |
| | Power roof ventilators group: | | | | | | | |
| 35644 41 | Axial and propeller type — thousands | 29 | (S) | 72.5 | .8 | 14 | (S) | 20.5 |
| 35644 43 | Centrifugal type — do | 17 | *334.7 | 57.5 | (D) | 8 | 150.9 | 31.3 |
| 35644 45 | Parts for power roof ventilators | 12 | (X) | 16.7 | (X) | 5 | (X) | 4.5 |
| 35644 00 | Propeller fans, axial fans, and power roof ventilators, n.s.k. | (NA) | (X) | 4.4 | (X) | (NA) | (X) | 9.1 |
| 35645 — | Dust collection and other air purification equipment for heating, ventilating, and air-conditioning systems (for cleaning incoming air) | (NA) | (X) | 425.5 | (X) | (NA) | (X) | 260.7 |
| 35645 31 | Air washers — thousands | 11 | (S) | 13.1 | (X) | 7 | (S) | 23.3 |
| 35645 41 | Electrostatic precipitation equipment — do | 16 | (S) | 70.2 | (X) | 8 | (S) | 34.9 |
| 35645 43 | Air filters for air-conditioners and furnaces, etc., of 2400 CFM or less — do | 38 | (S) | 187.5 | (X) | 23 | (S) | 64.8 |
| 35645 49 | Other dust collection and other air purification equipment (including air filters for air conditioners and furnaces) (more than 2400 CFM) | 58 | (X) | 143.8 | (X) | 49 | (X) | 126.7 |
| 35645 00 | Dust collection and air purification equipment, n.s.k. | (NA) | (X) | 10.9 | (X) | (NA) | (X) | 11.0 |
| 35646 00 | Dust collection and other air purification equipment for industrial gas cleaning systems (for cleaning outgoing air) | 73 | (X) | [9]425.6 | (X) | 62 | (X) | [9]381.7 |
| 35640 00 | Blowers and fans, n.s.k., typically for establishments with 10 employees or more (see note) | (NA) | (X) | 73.8 | (X) | (NA) | (X) | 66.8 |
| 35640 02 | Blowers and fans, n.s.k., typically for establishments with less than 10 employees (see note) | (NA) | (X) | 47.9 | (X) | (NA) | (X) | 55.7 |

See footnotes at end of table.

# Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

| 1982 product code | Product | 1982 | | | 1977 | | |
|---|---|---|---|---|---|---|---|
| | | Number of companies with shipments of $100,000 or more | Product shipments[1] | | Number of companies with shipments of $100,000 or more | Product shipments[1] | |
| | | | Quantity[2] | Value (million dollars) | | Quantity[2] | Value (million dollars) |
| | **INDUSTRIAL PATTERNS** | | | | | | |
| **3565— —** | **Total** | **(NA)** | **(X)** | **561.5** | **(NA)** | **(X)** | **411.9** |
| 35650 — | Industrial patterns, except shoe patterns: | | | | | | |
| 35650 11 | Foundry patterns | 562 | (X) | 350.1 | 298 | (X) | 213.4 |
| 35650 98 | All other industrial patterns (except shoe patterns) | 218 | (X) | 133.8 | 52 | (X) | 53.6 |
| 35650 00 | Industrial patterns, n.s.k., typically for establishments with 5 employees or more (see note) | (NA) | (X) | 45.2 | (NA) | (X) | 95.3 |
| 35650 02 | Industrial patterns, n.s.k., typically for establishments with less than 5 employees (see note) | (NA) | (X) | 32.4 | (NA) | (X) | 49.5 |
| | **SPEED CHANGERS, DRIVES, AND GEARS** | | | | | | |
| **3566— —** | **Total** | **(NA)** | **(X)** | **1 557.4** | **(NA)** | **(X)** | **1 199.7** |
| 35660 — | Speed changers, industrial high speed drives, and gears: Geared speed changers, industrial high speed drives, mechanical variable speed drives, and unassembled gearing (loose gears, speed reducers and increasers, mechanical variable speed drives, and mechanical power transmissions, except transmissions or gearing manufactured as integral components of automobiles, trucks, buses, tractors, and aircraft): | | | | | | |
| 35660 11 | Mechanical nonhydraulic variable speed changers and parts, excluding value of drivers — thousands | 29 | (S) | 113.4 | 24 | (S) | 100.8 |
| 35660 21 | Industrial high speed drives, fixed ratio (pitch line velocity of 5,000 feet per minute or more, or pinion speeds of 3,600 r.p.m. or more) — do. | 27 | (S) | 144.3 | 11 | **91.7 | 74.1 |
| | Speed reducers, fixed ratio, enclosed, except gear motors (sold without motor): Worm gear reducers, including "C" flange or scoop mount: | | | | | | |
| 35660 17 | 6 in. centers or more — do. | 16 | (S) | 42.9 | 12 | **27.4 | 25.2 |
| 35660 18 | 3 in. to 5.99 in. centers — do. | 23 | (S) | 67.0 | 13 | **191.8 | 19.9 |
| 35660 24 | Less than 3 in. centers — do. | 18 | 375.7 | 53.4 | 16 | *243.1 | 21.8 |
| | Shaft mounted reducers and screw conveyor drives, including repair parts (excluding shaft mounted helical gear motors and worm gear reducers): | | | | | | |
| 35660 25 | Hollow shaft diameter, 2 in. or less — do. | 12 | (S) | 28.3 | 9 | *97.6 | 24.7 |
| 35660 29 | Hollow shaft diameter, more than 2 in. — do. | 9 | (S) | 30.4 | 7 | (S) | 26.8 |
| 35660 27 | Helical, herringbone, spur, and spiral bevel reducers, more than 15 in. low speed centers — do. | 16 | (S) | 61.6 | 10 | (S) | 82.6 |
| 35660 28 | Helical, herringbone, spur, and spiral bevel reducers, 15 in. low speed centers or less — do. | 31 | (S) | 135.1 | 26 | (S) | 68.8 |
| | Gearmotors, sold with motors, including "C" flange and scoop mount units (including value of motors): Worm gearmotors: | | | | | | |
| 35660 31 | Less than 1/6 hp — do. | 4 | (S) | 20.1 | 10 | 387.2 | 21.6 |
| 35660 32 | 1/6 hp up to but excluding 1 hp — do. | 7 | 94.1 | 16.8 | 13 | 297.3 | 22.6 |
| 35660 35 | 1 hp to 5 hp — do. | 7 | 104.9 | 14.6 | 10 | 260.8 | 20.6 |
| 35660 36 | More than 5 hp — do. | 4 | (S) | 2.1 | 5 | 4.0 | 3.2 |
| | Helical, herringbone, spur, or spiral bevel gearmotors: | | | | | | |
| 35660 33 | Less than 1/6 hp — do. | 5 | (S) | 41.3 | 12 | 1 579.1 | 27.4 |
| 35660 40 | 1/6 hp up to but excluding 1 hp — do. | 5 | (S) | 13.9 | 11 | 112.2 | 17.1 |
| 35660 38 | 1 hp to 5 hp — do. | 9 | (S) | 38.8 | 12 | (S) | 24.7 |
| 35660 39 | More than 5 hp — do. | 8 | (S) | 28.4 | 11 | (S) | 35.9 |
| | Loose gears, pinions, and racks (excluding spare parts for reducers): | | | | | | |
| 35660 41 | Fine pitch (19.99 diametral pitch and finer) | 38 | (X) | 60.7 | 27 | (X) | 35.9 |
| | Coarse pitch (less than 19.99 diametral pitch): Helical, herringbone, and spur gears: | | | | | | |
| 35660 42 | 24 in. or less | 73 | (X) | 194.3 | 65 | (X) | 136.7 |
| 35660 43 | More than 24 in. diameter through 72 in. diameter | 36 | (X) | 84.4 | 32 | (X) | 49.4 |
| 35660 44 | More than 72 in. diameter | 11 | (X) | 15.9 | 14 | (X) | 21.9 |
| 35660 45 | Worms and worm gearing | 41 | (X) | 41.6 | 32 | (X) | 34.2 |
| 35660 46 | Others, including bevel gears and racks | 50 | (X) | 158.7 | 40 | (X) | 98.6 |
| 35660 51 | Other parts and components for speed changers, including housings, shafts, pins, and spacers | 44 | (X) | 74.7 | 37 | (X) | 84.1 |
| 35660 00 | Speed changers, drives, and gears, n.s.k., typically for establishments with 10 employees or more (see note) | (NA) | (X) | 47.6 | (NA) | (X) | 78.1 |
| 35660 02 | Speed changers, drives, and gears, n.s.k., typically for establishments with less than 10 employees (see note) | (NA) | (X) | 27.1 | (NA) | (X) | 43.0 |

See footnotes at end of table.

# Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

| 1982 product code | Product | 1982 | | | 1977 | | |
|---|---|---|---|---|---|---|---|
| | | Number of companies with shipments of $100,000 or more | Product shipments[1] | | Number of companies with shipments of $100,000 or more | Product shipments[1] | |
| | | | Quantity[2] | Value (million dollars) | | Quantity[2] | Value (million dollars) |
| | **INDUSTRIAL FURNACES AND OVENS** | | | | | | |
| 3567- — | **Total** | **(NA)** | **(X)** | **1 026.8** | **(NA)** | **(X)** | **707.1** |
| 35671 — | Electric industrial furnaces, ovens, and kilns, excluding induction | (NA) | (X) | 295.2 | (NA) | (X) | 140.3 |
| | Electric furnaces: | | | | | | |
| 35671 11 | Metal melting — number | 11 | (S) | 36.8 | 7 | (S) | 21.0 |
| 35671 21 | Metal processing and heat treating (such as annealing, hardening, carburizing, and porcelain enameling furnaces) — do | 41 | (S) | 111.6 | 26 | (S) | 56.2 |
| 35671 29 | Other electric furnaces — do | 12 | (S) | 64.9 | | | |
| 35671 43 | Electric industrial ovens and kilns, including infrared — do | 41 | (S) | 74.6 | 27 | (S) | 60.6 |
| 35671 00 | Electric industrial furnaces, ovens, and kilns, n.s.k. | (NA) | (X) | 7.3 | (NA) | (X) | 2.5 |
| 35672 — | Fuel-fired industrial furnaces, ovens, and kilns | (NA) | (X) | 248.6 | (NA) | (X) | 144.4 |
| | Furnaces: | | | | | | |
| 35672 11 | Metal melting, including blast furnaces and cupolas — number | 15 | (S) | 52.5 | 5 | 17 259 | 24.0 |
| 35672 21 | Metal processing and heat treating (such as annealing, hardening, carburizing, and porcelain enameling furnaces) — do | 36 | (S) | 102.3 | 26 | (S) | 68.2 |
| 35672 61 | Hot rolling, forging, forming, and extruding — do | 6 | (S) | 9.2 | 23 | (S) | 51.0 |
| 35672 41 | Industrial ovens — do | 40 | (S) | 83.4 | | | |
| 35672 00 | Fuel-fired industrial furnaces, ovens, and kilns, n.s.k. | (NA) | (X) | 1.2 | (NA) | (X) | 1.2 |
| 35674 — | High frequency induction and dielectric heating equipment | (NA) | (X) | 131.9 | (NA) | (X) | 133.4 |
| | Induction furnaces and heating equipment: | | | | | | |
| 35674 11 | Radio frequency type (includes spark gap) and line and motor-generator set frequency types, except metal melting — number | 14 | (S) | 26.8 | 9 | *689 | 14.5 |
| 35674 17 | Metal melting induction furnaces — do | 7 | (S) | 102.8 | 8 | 395 | 23.8 |
| 35674 19 | All other induction furnaces and heating equipment — do | 20 | | | 38 | (S) | 84.6 |
| 35674 31 | Dielectric heating equipment — do | 4 | (Z) | 2.3 | 6 | (X) | 8.4 |
| 35674 00 | High frequency induction and dielectric heating equipment, n.s.k. | (NA) | (X) | – | (NA) | (X) | 2.1 |
| 35675 — | Electrical heating equipment for industrial use, n.e.c., (except soldering irons) and parts and attachments | (NA) | (X) | 289.1 | (NA) | (X) | 204.1 |
| | Industrial electric heating units and devices, except heating units for electric furnaces: | | | | | | |
| 35675 51 | Tubular heaters — number | 17 | (S) | 25.5 | 7 | (X) | 26.4 |
| 35675 59 | All other industrial electric heating units and devices, including strip, space, and ring heaters; water and oil immersion heaters; glue and compound pots, etc. — do | 46 | (S) | 163.2 | 24 | (X) | 90.2 |
| 35675 91 | Parts, attachments, and components for electric industrial furnaces and ovens, including electric heating units (sold separately) | 47 | (X) | 99.2 | 45 | (X) | 86.0 |
| 35675 00 | Electrical heating equipment, industrial, n.s.k. | (NA) | (X) | 1.2 | (NA) | (X) | 1.5 |
| 35670 00 | Industrial furnaces and ovens, n.s.k., typically for establishments with 10 employees or more (see note) | (NA) | (X) | 32.0 | (NA) | (X) | 67.1 |
| 35670 02 | Industrial furnaces and ovens, n.s.k., typically for establishments with less than 10 employees (see note) | (NA) | (X) | 30.0 | (NA) | (X) | 17.8 |
| | **POWER TRANSMISSION EQUIPMENT, N.E.C.** | | | | | | |
| 3568- — | **Total** | **(NA)** | **(X)** | **1 985.6** | **(NA)** | **(X)** | **1 710.9** |
| 35681 — | Plain bearings and bushings | (NA) | (X) | 385.0 | (NA) | (X) | 275.1 |
| 35681 15 | Plain bearings and bushings, unmounted, machined, excluding carbon and graphite, all types, except automotive and aircraft | 75 | (X) | 366.6 | 54 | (X) | 243.2 |
| 35681 51 | Mounted bearings, plain (except automotive and aircraft) | 9 | (X) | 12.5 | 7 | (X) | 27.5 |
| 35681 00 | Plain bearings and bushings, n.s.k. | (NA) | (X) | 5.9 | (NA) | (X) | 4.4 |
| 35683 — | Mechanical power transmission equipment, except speed changers, drives, and gears, n.e.c. (excluding equipment for automobiles, trucks, buses, tractors, and aircraft) | (NA) | (X) | 1 556.3 | (NA) | (X) | 1 419.1 |
| | Clutches: | | | | | | |
| 35683 11 | Friction type — thousands | 28 | *2 545.3 | 136.9 | 12 | (S) | 73.4 |
| 35683 13 | Hydraulic type, including hydraulic couplings — do | 10 | (S) | 25.6 | 9 | 304.9 | 36.5 |
| 35683 19 | All other clutches — do | 20 | *705.0 | 105.3 | 18 | (S) | 68.9 |
| | Flexible couplings: | | | | | | |
| | 1 in. nominal bore or more: | | | | | | |
| 35683 21 | Gear type — do | 13 | (S) | 62.0 | 10 | (S) | 40.7 |
| 35683 22 | Other than gear type — do | 18 | (S) | 85.1 | 16 | **3 556.2 | 57.9 |
| 35683 24 | Less than 1 in. nominal bore — do | 9 | (S) | 9.3 | 9 | *1 849.4 | 11.7 |
| 35683 25 | Universal joints — do | 16 | (S) | 121.9 | 13 | (S) | [10] |
| 35683 26 | Nonflexible couplings — do | 10 | (S) | 23.2 | [11] | [11] | [11] |
| 35683 27 | Flexible shafts — do | 4 | [12] | [12] | 4 | (S) | [10]138.4 |
| 35683 28 | Drive shafts, except flexible shafts — do | 8 | (S) | 10.4 | [11] | [11] | [11] |
| 35683 29 | Drive shaft guards, flanges, and adapter plates | 4 | [12] | [12] | [11] | [11] | [11] |
| 35683 30 | Ball joints — thousands | 2 | (S) | [12]16.4 | [11] | [11] | [11] |
| | Chains for sprocket drives: | | | | | | |
| | ASA standard roller chain: | | | | | | |
| 35683 32 | 3 in. or less pitch | 8 | (X) | 145.8 | 8 | (X) | 122.3 |
| 35683 34 | More than 3 in. pitch | 4 | | | 4 | (X) | 10.9 |
| 35683 35 | Other chain for sprocket drives | 8 | (X) | 97.2 | 9 | (X) | 129.7 |
| | Sprockets: | | | | | | |
| 35683 43 | For ASA standard roller chain | 19 | (X) | 85.5 | 19 | (X) | 65.7 |
| 35683 45 | Other sprockets | 20 | (X) | 40.6 | 11 | (X) | 21.0 |
| 35683 51 | Pulleys — thousands | 19 | (S) | 38.7 | 13 | (S) | 29.9 |

See footnotes at end of table.

# Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

| 1982 product code | Product | 1982 | | | 1977 | | |
|---|---|---|---|---|---|---|---|
| | | Number of companies with shipments of $100,000 or more | Product shipments[1] | | Number of companies with shipments of $100,000 or more | Product shipments[1] | |
| | | | Quantity[2] | Value (million dollars) | | Quantity[2] | Value (million dollars) |
| | **POWER TRANSMISSION EQUIPMENT, N.E.C.**—Con. | | | | | | |
| 35683 — | Mechanical power transmission equipment, except speed changers, drives, and gears, n.e.c. (excluding equipment for automobiles, trucks, buses, tractors, and aircraft) —Con. | | | | | | |
| | Sheaves: | | | | | | |
| 35683 61 | Single drive ---- thousands | 9 | *5 492.3 | 38.8 | 7 | 5 313.5 | 16.4 |
| 35683 65 | Multiple drive ---- do | 8 | (S) | 39.5 | 7 | (S) | 43.7 |
| 35683 91 | Mechanical valve operators, excluding valve or motor ---- do | 2 | [13] | [13] | 3 | | |
| 35683 92 | Mechanical transmissions, except marine ---- do | 4 | (S) | [13]63.5 | 1 | (X) | 67.7 |
| 35683 94 | Inboard marine propulsion gear transmissions, including reversing, speed changing, and turbine driven gear drives ---- do | 7 | **75.7 | 71.7 | 4 | | |
| 35683 96 | Outboard gear drives (inboard prime mover) ---- do | 5 | (S) | 22.8 | 3 | (X) | 50.0 |
| 35683 97 | Mechanical seals for rotating shafts ---- | 6 | (X) | 22.3 | 5 | | |
| 35683 99 | Other mechanical power transmission equipment, except aircraft, automobile, truck, and bus[14] ---- | 38 | (X) | 285.7 | [11]43 | (X) | [11]422.6 |
| 35683 00 | Mechanical power transmission equipment, n.e.c., n.s.k. ---- | (NA) | (X) | 8.1 | (NA) | (X) | 11.7 |
| 35680 00 | Power transmission equipment, n.e.c., n.s.k., typically for establishments with 10 employees or more (see note) ---- | (NA) | (X) | 19.7 | (NA) | (X) | 4.4 |
| 35680 02 | Power transmission equipment, n.e.c., n.s.k., typically for establishments with less than 10 employees (see note) ---- | (NA) | (X) | 24.6 | (NA) | (X) | 12.2 |
| | **GENERAL INDUSTRIAL MACHINERY, N.E.C.** | | | | | | |
| 3569– — | **Total** ---- | (NA) | (X) | 4 410.7 | (NA) | (X) | 2 689.4 |
| 35691 — | Packing, packaging, and bottling machinery (except for industrial food products) ---- | (NA) | (X) | 885.2 | (NA) | (X) | 440.5 |
| 35691 15 | Cartoning and multipacking machinery ---- number | 27 | (S) | 63.1 | 17 | 1 750 | 16.4 |
| 35691 22 | Thermoforming and blister packaging machinery ---- do | 5 | 11 061 | 17.4 | 3 | (S) | 43.1 |
| 35691 26 | Bag opening, filling, and closing machines ---- do | 19 | (S) | 41.4 | 17 | | |
| | Forming, filling, and sealing machinery, bag or pouch (must perform all three functions): | | | | | | |
| 35691 29 | Horizontal type ---- do | 10 | **207 | 19.1 | 12 | (S) | 27.6 |
| 35691 30 | Vertical type ---- do | 6 | (S) | 12.1 | | | |
| 35691 32 | Wrapping, banding, bundling, fastening, and sleeve wrapping machinery ---- do | 23 | 9 535 | 72.3 | 31 | **6 437 | 91.7 |
| 35691 33 | Shrink film packaging machinery, including shrink tunnels ---- do | 14 | (S) | 24.5 | | | |
| 35691 35 | Stretch film packaging machinery ---- do | 5 | (S) | 14.3 | | | |
| 35691 41 | Vacuum, gas, and skin packaging machinery ---- do | 3 | [15] | [15] | | | |
| | Filling machinery: | | | | | | |
| 35691 52 | Dry products (free flowing and nonfree flowing, including powders) ---- do | 8 | (S) | 9.3 | 16 | (S) | 23.3 |
| 35691 53 | Liquids (free flowing) ---- do | 15 | (S) | 18.3 | | | |
| 35691 54 | Viscous products (very heavy liquids, scurries, and pumpable semisolids) ---- do | 7 | (S) | 6.0 | | | |
| 35691 55 | By count ---- do | 6 | 547 | 6.1 | | | |
| 35691 63 | Labeling, code marking, imprinting, and leaflet/coupon inserting machinery ---- do | 34 | **20 525 | 149.6 | 27 | (S) | 50.6 |
| 35691 71 | Case forming, opening, loading, unloading, and sealing machinery ---- do | 23 | (S) | 72.1 | 16 | 1 673 | 25.8 |
| 35691 81 | Capping, sealing, and lidding machinery, including can sealing machinery, but excluding filling machinery ---- do | 13 | **904 | 12.8 | 10 | (S) | 11.1 |
| 35691 82 | Accumulating, collating, feeding, and unscrambling machinery ---- do | 15 | (S) | 16.9 | | | |
| 35691 83 | Testing, inspecting, and weight control machinery ---- do | 10 | (S) | 14.1 | | | |
| 35691 84 | Other machinery, including combinations of machinery classified in more than one of the above ---- do | 53 | (S) | [15]164.9 | 55 | (S) | 112.8 |
| 35691 91 | Parts for packaging machinery ---- | 70 | (X) | 120.6 | | | |
| 35691 00 | Packing, packaging, and bottling machinery, n.s.k. ---- | (NA) | (X) | 30.4 | (NA) | (X) | 38.1 |
| 35693 — | Filters and strainers, except fluid power ---- | (NA) | (X) | 1 137.4 | (NA) | (X) | [16]630.0 |
| | Filters and strainers, including purification, clarification, and solids removal, (excluding internal combustion engine filters, dust collection and air purification equipment, air filters for comfort heating and air conditioning equipment, mining screens, and fluid power filters): | | | | | | |
| | Containment (housing) devices: | | | | | | |
| 35693 01 | Pressurized, including filters which also dehydrate and/or deaerate ---- thousands | 69 | (S) | 220.8 | [16]63 | [16]326.1 | [16]159.3 |
| 35693 02 | Vacuum, including filters which also dehydrate and/or deaerate ---- do | 22 | *18.0 | 94.0 | [16]14 | (S) | [16]77.0 |
| 35693 03 | Gravity ---- do | 46 | (S) | 302.3 | [16]30 | (S) | [16]111.9 |
| 35693 09 | Parts and accessories, sold separately ---- | 47 | 1 393.3 | 96.7 | [16]41 | (X) | [16]81.7 |
| | Media: | | | | | | |
| 35693 11 | Reusable (cleanable) ---- | 33 | (X) | 108.2 | [16]30 | (X) | [16]55.4 |
| 35693 12 | Nonreusable, including disposable (throw away) filter cartridges ---- | 62 | (X) | 279.3 | [16]24 | (X) | [16]104.8 |
| 35693 00 | Filters and strainers, except fluid power, n.s.k. ---- | (NA) | (X) | 36.2 | (NA) | (X) | [16]39.9 |

See footnotes at end of table.

# Table 6a. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendix. For meaning of abbreviations and symbols, see introductory text]

| 1982 product code | Product | 1982 | | | 1977 | | |
|---|---|---|---|---|---|---|---|
| | | Number of companies with shipments of $100,000 or more | Product shipments[1] | | Number of companies with shipments of $100,000 or more | Product shipments[1] | |
| | | | Quantity[2] | Value (million dollars) | | Quantity[2] | Value (million dollars) |
| | **GENERAL INDUSTRIAL MACHINERY, N.E.C.**—Con. | | | | | | |
| 35694 — | Filters for hydraulic fluid power systems, exc. aircraft type: | | | | | | |
| 35694 00 | Filters for hydraulic fluid power systems, exc. aircraft type: | | | | | | |
| | As reported in the census of manufactures | 27 | (X) | 114.5 | [16] | [16] | [16] |
| | As reported in the Current Industrial Report MA-35N, Fluid Power Products (Including Aerospace) | (NA) | (X) | 110.8 | [16] | [16] | [16] |
| | Hydraulic fluid filter assemblies, with or without filter element installed: | | | | | | |
| 35694 11 | Low pressure (below 300 P.S.I.) thousands | (NA) | 707.7 | 20.1 | [16] | [16] | [16] |
| 35694 13 | High pressure (300 P.S.I. and above) do | (NA) | 169.1 | 30.1 | [16] | [16] | [16] |
| | Hydraulic fluid filter replacement: Elements: | | | | | | |
| 35694 15 | Reusable (cleanable) type do | (NA) | 509.4 | 7.6 | [16] | [16] | [16] |
| 35694 17 | Nonreusable type do | (NA) | 6 287.0 | 38.7 | [16] | [16] | [16] |
| 35694 19 | Hydraulic fluid strainers and separators, other contaminant removal devices, and filter parts and accessories | (NA) | (X) | 14.3 | [16] | [16] | [16] |
| 35695 — | Filters for pneumatic fluid power systems, exc. aircraft type: | | | | | | |
| 35695 00 | Filters for pneumatic fluid power systems, exc. aircraft type: | | | | | | |
| | As reported in the census of manufactures | 16 | (X) | 60.2 | [16] | [16] | [16] |
| | As reported in the Current Industrial Report MA-35N, Fluid Power Products (Including Aerospace) | (NA) | (X) | 60.6 | [16] | [16] | [16] |
| 35695 31 | Pneumatic air supply filter assemblies and filter replacement elements including coalescers, excluding those shipped as part of a filter-regulator or filter-regulator-lubricator combination unit thousands | (NA) | 2 291.7 | 39.5 | [16] | [16] | [16] |
| 35695 39 | Pneumatic air exhaust mufflers, diffusers, and filter parts, accessories, and contaminant removal devices | (NA) | (X) | 21.1 | [16] | [16] | [16] |
| 35696 — | Filters for aircraft fluid power (hydraulic and pneumatic) systems: | | | | | | |
| 35696 00 | Filters for aircraft fluid power (hydraulic and pneumatic) systems: | | | | | | |
| | As reported in the census of manufactures | 11 | (X) | 41.0 | [16] | [16] | [16] |
| | As reported in the Current Industrial Report MA-35N, Fluid Power Products (Including Aerospace) | (NA) | (X) | 31.5 | [16] | [16] | [16] |
| 35699 — | General industrial machinery, n.e.c. | (NA) | (X) | 1 680.4 | (NA) | (X) | 1 311.6 |
| 35699 31 | Gas generating equipment thousands | 13 | 4.6 | 90.4 | 15 | (S) | 48.7 |
| 35699 32 | Gas separating equipment do | 14 | 9.0 | 124.9 | 8 | .7 | 25.1 |
| 35699 33 | Steam and vapor separators do | 7 | (S) | 15.3 | 3 | .1 | 6.1 |
| 35699 35 | Compressed air and gas dryers do | 15 | **84.7 | 53.8 | [17] | [17] | [17] |
| 35699 36 | Mixers for industrial processes, for solids or liquids do | 33 | (S) | 121.9 | [17] | [17] | [17] |
| 35699 41 | Lubrication systems (industrial, centralized, and automatic) do | 17 | (S) | 53.3 | 15 | 266.8 | 49.6 |
| 35699 43 | Sifting and screening machines for general industrial use do | 11 | (S) | 28.4 | 7 | (S) | 23.8 |
| 35699 45 | Presses, metal baling do | 14 | (S) | 46.4 | 4 | *.1 | 7.4 |
| 35699 51 | Centrifugals and separators, exc. cream, grain, and berry do | 22 | (S) | 239.6 | 15 | (S) | 87.8 |
| 35699 61 | Automatic fire sprinkler equipment do | 21 | (S) | 145.1 | 14 | (S) | 50.8 |
| 35699 71 | Pneumatic jacks do | 6 | (S) | 6.6 | 4 | (S) | 27.0 |
| 35699 73 | Hydraulic jacks do | 24 | **129.3 | 67.5 | 23 | (S) | 52.3 |
| 35699 74 | Screw jacks, complete, and jack screws, sold separately (except automotive) do | 7 | 188.0 | 42.6 | 5 | 5.1 | 7.4 |
| 35699 97 | All other general industrial machinery and equipment, including low pressure air and gas dehydrators do | 202 | (X) | 584.9 | 296 | (X) | [17]758.3 |
| 35699 00 | General industrial machinery, n.e.c., n.s.k. | (NA) | (X) | 59.8 | (NA) | (X) | 167.3 |
| 35690 00 | General industrial machinery, n.e.c., n.s.k., typically for establishments with 10 employees or more (see note) | (NA) | (X) | 404.5 | (NA) | (X) | 251.4 |
| 35690 02 | General industrial machinery, n.e.c., n.s.k., typically for establishments with less than 10 employees (see note) | (NA) | (X) | 87.5 | (NA) | (X) | 55.9 |

Note: In 1982 Census of Manufactures, data for establishments of small single-unit companies with up to 20 employees were estimated from administrative-record data rather than data actually collected from respondents. Employment cutoff used for administrative records for each industry and shipments figures are included in code ending with "002". In both 1982 and 1977 Censuses of Manufactures, products not completely identified on standard forms were coded in appropriate product class (five-digit) followed by "00" or to appropriate product group code (four-digit) followed by "000".

[1]Data reported by all producers, not just those with shipments of $100,000 or more.

[2]For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: * 10 to 19 percent estimated; ** 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).

[3]Prior to 1981, data for submersible centrifugal pumps were not collected. For 1977, data for these pumps were included with other centrifugal categories.

[4]For 1977, data for product codes 35615 30 and 35615 10 were included with product code 35615 20 to avoid disclosing data for individual companies.

[5]For 1977, data for aerospace products were included with those for nonaerospace. Comparable data for individual products are not available.

[6]For 1977, data for parts were shown with product code 3561C 00, since only one parts category was collected that year.

[7]For 1977, all data were collected in the census of manufactures. Current Industrial Report MA-35Q originated in 1978.

[8]For 1982 and 1977, data for 35629 35 were included with 35629 41.

[9]For detailed information, see the 1982 Current Industrial Report Series, MA-35J, Selected Industrial Air Pollution Control Equipment. The census of manufactures is not comparable because the current survey includes nonmanufacturing establishments.

[10]For 1977, product codes 35683 25 and 35683 27 are combined to avoid disclosing data for individual companies.

[11]For 1977, product codes 35683 26, 35683 28, 35683 29, and 35683 30 were included with product code 35683 99.

[12]For 1982, product codes 35683 27, 35683 29, and 35683 30 were combined to avoid disclosing data for individual companies.

[13]For 1982, product codes 35683 91 and 35683 92 were combined to avoid disclosing data for individual companies.

[14]For 1977, packaged hydraulic drives, including hydrostatic transmissions, were included with product code 35683 99. For 1982, this product is included in product code 35612 00.

[15]For 1982, product codes 35691 41 and 35691 84 are combined to avoid disclosing data for individual companies.

[16]For 1977, filters for fluid power systems were included with filters for general industrial use. 1977 data are shown combined with codes beginning with 35693. The Current Industrial Report MA-35N series originated in 1981.

[17]For 1977, data for these products were included with product code 35699 97.

# Table 6b. Product Classes—Value of Shipments by All Producers for Specified States: 1982 and 1977

[Million dollars. Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in table 2. Also, product classes are not shown if they are miscellaneous or "not specified by type" classes. Statistics for some States are withheld because they are either less than $2 million in product class shipments or they disclose data for individual companies in 1982. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Product class and geographic area | 1982 value of product shipments | 1977 value of product shipments |
|---|---|---|
| **35611, INDUSTRIAL PUMPS, EXCEPT FLUID POWER PUMPS** | | |
| **United States** | **1 916.9** | **1 386.7** |
| California | 347.5 | 303.1 |
| Connecticut | 3.6 | (BB) |
| Florida | 14.7 | (AA) |
| Georgia | 26.7 | 19.7 |
| Illinois | 152.3 | 97.1 |
| Indiana | 41.7 | 31.3 |
| Massachusetts | 35.9 | 23.6 |
| Michigan | 49.3 | 32.2 |
| Minnesota | 39.8 | 31.7 |
| Missouri | 13.1 | 10.5 |
| New Jersey | 168.7 | 136.9 |
| New York | 103.1 | 109.9 |
| Ohio | 184.9 | 147.7 |
| Oklahoma | 78.9 | 49.8 |
| Pennsylvania | 122.3 | 117.0 |
| Rhode Island | 11.3 | 10.7 |
| South Carolina | 12.4 | (EE) |
| Tennessee | 43.9 | (FF) |
| Texas | 128.9 | 40.0 |
| Wisconsin | 52.0 | 15.3 |
| **35613, DOMESTIC WATER SYSTEMS** | | |
| **United States** | **215.5** | **223.8** |
| California | 9.7 | 30.3 |
| Ohio | 25.0 | 31.8 |
| Texas | 15.3 | 5.7 |
| **35615, PUMPS, N.E.C.** | | |
| **United States** | **1 048.2** | **395.7** |
| California | 97.3 | 29.0 |
| Illinois | 120.5 | 51.6 |
| Kansas | 11.4 | (CC) |
| Michigan | 16.1 | 1.8 |
| New York | 12.0 | 5.9 |
| Ohio | 46.7 | 32.4 |
| Oklahoma | 76.2 | (FF) |
| Pennsylvania | 39.1 | (CC) |
| Texas | 475.4 | 123.0 |
| Wisconsin | 10.5 | 14.3 |
| **35617, FLUID POWER PUMPS, EXCEPT AEROSPACE** | | |
| **United States** | **648.5** | **(NA)** |
| California | 12.1 | (NA) |
| Illinois | 61.3 | (NA) |
| Michigan | 57.6 | (NA) |
| Minnesota | 44.4 | (NA) |
| Ohio | 73.4 | (NA) |
| Oklahoma | 20.5 | (NA) |
| Pennsylvania | 19.9 | (NA) |
| Texas | 14.7 | (NA) |
| West Virginia | 8.1 | (NA) |
| **3561A, PARTS FOR FLUID POWER PUMPS, EXCEPT AEROSPACE** | | |
| **United States** | **218.6** | **(NA)** |
| Oklahoma | 5.0 | (NA) |
| Texas | 62.3 | (NA) |
| **3561B, PARTS FOR AEROSPACE FLUID POWER PUMPS** | | |
| **United States** | **103.8** | **(NA)** |
| California | 13.8 | (NA) |
| **3561C, PARTS FOR PUMPS, EXCEPT FLUID POWER** | | |
| **United States** | **1 298.9** | **(NA)** |
| Arkansas | 14.2 | (NA) |
| California | 172.8 | (NA) |
| Florida | 8.1 | (NA) |
| Illinois | 96.7 | (NA) |
| Indiana | 26.8 | (NA) |
| Iowa | 30.7 | (NA) |
| Massachusetts | 66.9 | (NA) |
| Michigan | 61.6 | (NA) |
| New Jersey | 41.1 | (NA) |
| Ohio | 86.9 | (NA) |
| Oklahoma | 117.5 | (NA) |
| Pennsylvania | 77.4 | (NA) |
| Texas | 187.8 | (NA) |
| Wisconsin | 27.6 | (NA) |
| **35621, BALL BEARINGS, UNMOUNTED** | | |
| **United States** | **1 087.1** | **749.9** |
| California | 24.8 | (BB) |
| Connecticut | 262.9 | 265.4 |
| Illinois | 40.8 | 39.7 |
| Indiana | 50.4 | 30.0 |
| Michigan | 67.8 | (FF) |
| New York | 81.5 | 70.2 |
| Ohio | 212.7 | (GG) |
| South Carolina | 25.9 | 14.3 |
| **35622, TAPERED ROLLER BEARINGS, UNMOUNTED** | | |
| **United States** | **710.9** | **748.6** |
| South Carolina | 85.5 | 83.1 |
| **35623, ROLLER BEARINGS, EXCEPT TAPERED, UNMOUNTED** | | |
| **United States** | **614.1** | **472.9** |
| Indiana | 75.8 | 64.0 |
| New Jersey | 22.6 | 40.0 |
| **35624, MOUNTED BEARINGS, EXCEPT PLAIN** | | |
| **United States** | **241.7** | **213.1** |
| **35629, PARTS FOR BALL AND ROLLER BEARINGS** | | |
| **United States** | **298.4** | **243.1** |
| Connecticut | 46.5 | 43.0 |
| Illinois | 10.3 | 7.1 |
| Indiana | 20.6 | 18.6 |
| New Jersey | 5.2 | (AA) |
| South Carolina | 26.1 | (FF) |
| **35631, AIR AND GAS COMPRESSORS AND VACUUM PUMPS** | | |
| **United States** | **1 677.1** | **1 290.3** |
| California | 37.2 | 39.0 |
| Illinois | 106.0 | 129.2 |
| Massachusetts | 33.3 | 31.1 |
| Missouri | 30.6 | (BB) |
| New York | 290.3 | 257.3 |
| Ohio | 150.1 | 163.4 |
| Oklahoma | 67.8 | 19.3 |
| Pennsylvania | 242.6 | 204.6 |
| Texas | 119.4 | 30.8 |
| Wisconsin | 23.7 | 26.1 |
| **35632, PARTS FOR AIR AND GAS COMPRESSORS** | | |
| **United States** | **652.7** | **384.1** |
| California | 16.8 | (CC) |
| New York | 204.7 | 144.8 |
| Ohio | 59.8 | 27.8 |
| Pennsylvania | 147.4 | 46.1 |
| Texas | 10.8 | 6.7 |
| **35635, INDUSTRIAL SPRAYING EQUIPMENT** | | |
| **United States** | **442.0** | **221.6** |
| California | 15.6 | (BB) |
| Michigan | 137.1 | (FF) |
| New Jersey | 9.1 | (NA) |
| Ohio | 59.0 | (GG) |
| Pennsylvania | 3.7 | (AA) |
| Texas | 5.7 | 5.4 |
| **35643, CENTRIFUGAL FANS AND BLOWERS** | | |
| **United States** | **556.9** | **354.1** |
| California | 24.8 | 16.2 |
| Connecticut | 33.9 | (EE) |
| Illinois | 67.9 | 49.3 |
| Indiana | 78.2 | 51.7 |
| Michigan | 26.5 | 34.0 |
| Minnesota | 20.6 | 15.9 |
| New York | 80.2 | 46.9 |
| Ohio | 36.4 | 38.3 |
| Pennsylvania | 34.0 | 11.9 |

See footnotes at end of table.

## Table 6b. Product Classes—Value of Shipments by All Producers for Specified States: 1982 and 1977—Con.

[Million dollars. Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in table 2. Also, product classes are not shown if they are miscellaneous or "not specified by type" classes. Statistics for some States are withheld because they are either less than $2 million in product class shipments or they disclose data for individual companies in 1982. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Product class and geographic area | 1982 value of product shipments | 1977 value of product shipments |
|---|---|---|
| **35644, PROPELLER AND AXIAL FANS, AND POWER ROOF VENTILATORS** | | |
| **United States** | **464.8** | **303.3** |
| California | 23.4 | 19.9 |
| Colorado | 2.8 | (BB) |
| Illinois | 40.1 | 19.0 |
| Indiana | 37.2 | 36.0 |
| Michigan | 14.4 | 10.1 |
| Minnesota | 8.4 | (BB) |
| Ohio | 106.7 | 47.8 |
| Pennsylvania | 12.5 | 9.3 |
| Texas | 21.3 | 10.3 |
| **35645, AIR PURIFICATION EQUIPMENT FOR ENVIRONMENTAL SYSTEMS** | | |
| **United States** | **425.5** | **260.7** |
| California | 83.9 | 43.1 |
| Illinois | 22.0 | 19.1 |
| Kentucky | 24.2 | 14.2 |
| Maryland | 15.9 | (AA) |
| Michigan | 9.4 | 6.2 |
| New Jersey | 18.1 | 12.5 |
| North Carolina | 40.9 | 24.1 |
| Ohio | 20.4 | 20.1 |
| Pennsylvania | 25.9 | 17.1 |
| Tennessee | 34.8 | 15.1 |
| Texas | 24.0 | 9.9 |
| Wisconsin | 12.4 | 5.3 |
| **35646, AIR PURIFICATION EQUIPMENT FOR INDUSTRIAL GASES** | | |
| United States | 425.6 | 381.7 |
| California | 38.5 | 22.8 |
| Michigan | 11.3 | 7.7 |
| New Jersey | 77.2 | 42.9 |
| New York | 15.5 | 9.4 |
| Ohio | 41.7 | 35.7 |
| Pennsylvania | 85.6 | 87.0 |
| Texas | 8.1 | 12.0 |
| **35671, ELECTRIC INDUSTRIAL FURNACES, OVENS, AND KILNS** | | |
| **United States** | **295.2** | **140.3** |
| California | 40.5 | 2.3 |
| Illinois | 22.6 | 21.9 |
| Indiana | 5.0 | (CC) |
| Michigan | 9.6 | 9.0 |
| New Jersey | 24.3 | 8.6 |
| New York | 8.1 | 3.1 |
| Ohio | 28.1 | 20.1 |
| Pennsylvania | 40.7 | 32.7 |
| Texas | 7.2 | (NA) |
| Wisconsin | 12.2 | 7.4 |
| **35672, FUEL-FIRED INDUSTRIAL FURNACES, OVENS, AND KILNS** | | |
| **United States** | **248.6** | **144.4** |
| California | 8.4 | 5.3 |
| Illinois | 22.1 | (EE) |
| Michigan | 40.2 | 38.0 |
| New Jersey | 16.4 | 12.1 |
| New York | 2.5 | (AA) |
| Ohio | 55.9 | 33.8 |
| Pennsylvania | 46.0 | 15.8 |
| Texas | 2.5 | (NA) |
| Wisconsin | 8.0 | (BB) |
| **35674, HIGH FREQUENCY INDUCTION AND DIELECTRIC HEATING EQUIPMENT** | | |
| **United States** | **131.9** | **133.4** |
| Massachusetts | 6.0 | 10.6 |
| Michigan | 9.5 | 14.4 |
| Ohio | 18.6 | 26.7 |
| Wisconsin | 21.8 | (CC) |
| **35675, ELECTRICAL HEATING EQUIPMENT FOR INDUSTRIAL USE, N.E.C.** | | |
| **United States** | **289.1** | **204.1** |
| California | 13.2 | 11.2 |
| Illinois | 30.5 | 7.7 |
| Massachusetts | 12.0 | 5.3 |
| Michigan | 11.7 | 7.5 |
| New Jersey | 4.4 | 11.4 |
| New York | 9.5 | (AA) |
| Ohio | 31.2 | 27.6 |
| Pennsylvania | 41.8 | 49.1 |
| Texas | 5.9 | (NA) |
| **35681, PLAIN BEARINGS AND BUSHINGS** | | |
| **United States** | **385.0** | **275.1** |
| California | 48.1 | 29.3 |
| Illinois | 9.1 | 10.9 |
| Indiana | 22.6 | 33.2 |
| Michigan | 36.7 | 24.2 |
| New Jersey | 4.7 | 8.8 |
| New York | 5.6 | (NA) |
| Ohio | 45.7 | 46.6 |
| Pennsylvania | 68.2 | (GG) |
| Tennessee | 17.5 | 7.4 |
| Wisconsin | 38.1 | 23.7 |
| **35683, MECHANICAL POWER TRANSMISSION EQUIPMENT, N.E.C.** | | |
| **United States** | **1 556.3** | **1 419.1** |
| California | 47.9 | 35.3 |
| Connecticut | 39.1 | 20.3 |
| Georgia | 35.3 | (BB) |
| Illinois | 262.3 | 184.6 |
| Indiana | 150.1 | 299.2 |
| Massachusetts | 61.5 | 68.3 |
| Michigan | 100.3 | 178.9 |
| Minnesota | 25.1 | 15.0 |
| New Hampshire | 20.0 | (CC) |
| New Jersey | 28.1 | 15.6 |
| New York | 23.2 | 47.1 |
| North Carolina | 37.7 | 28.7 |
| Ohio | 90.2 | 61.4 |
| Pennsylvania | 86.0 | 63.2 |
| Texas | 48.5 | 41.0 |
| Wisconsin | 237.0 | 157.7 |
| **35691, PACKING, PACKAGING, AND BOTTLING MACHINERY** | | |
| **United States** | **885.2** | **440.5** |
| California | 63.5 | 19.4 |
| Connecticut | 29.6 | (CC) |
| Florida | 33.3 | 11.6 |
| Georgia | 24.2 | 4.7 |
| Illinois | 114.0 | 72.9 |
| Indiana | 5.0 | 17.5 |
| Massachusetts | 68.1 | 41.1 |
| Michigan | 28.0 | 7.9 |
| Minnesota | 33.4 | 19.4 |
| New Hampshire | 31.7 | (EE) |
| New Jersey | 98.5 | 48.9 |
| New York | 40.1 | 37.4 |
| North Carolina | 6.6 | (AA) |
| Ohio | 87.3 | 40.1 |
| Pennsylvania | 30.1 | 13.0 |
| Texas | 12.8 | 1.6 |
| Virginia | 11.9 | (AA) |
| Washington | 29.6 | 15.9 |
| Wisconsin | 93.7 | 47.2 |
| **35693, FILTERS AND STRAINERS, EXCEPT FLUID POWER** | | |
| **United States** | **1 137.4** | **(NA)** |
| California | 152.1 | (NA) |
| Connecticut | 65.2 | (NA) |
| Florida | 74.1 | (NA) |
| Illinois | 58.3 | (NA) |
| Indiana | 38.1 | (NA) |
| Michigan | 70.7 | (NA) |
| Minnesota | 8.3 | (NA) |
| Missouri | 16.0 | (NA) |
| New Jersey | 56.5 | (NA) |
| New York | 105.9 | (NA) |
| North Carolina | 42.5 | (NA) |
| Ohio | 58.2 | (NA) |
| Oklahoma | 15.1 | (NA) |
| Pennsylvania | 51.4 | (NA) |
| South Carolina | 3.0 | (NA) |
| Tennessee | 13.6 | (NA) |
| Texas | 50.0 | (NA) |
| Wisconsin | 8.8 | (NA) |
| **35694, FILTERS FOR HYDRAULIC FLUID POWER SYSTEMS, EXCLUDING AIRCRAFT TYP** | | |
| **United States** | **114.5** | **(NA)** |
| California | 10.4 | (NA) |
| Illinois | 4.9 | (NA) |
| **35696, FILTERS FOR AIRCRAFT FLUID POWER (HYDRAULIC AND PNEUMATIC) SYSTEM** | | |
| **United States** | **41.0** | **(NA)** |
| California | 25.1 | (NA) |

See footnotes at end of table.

## Table 6b. Product Classes—Value of Shipments by All Producers for Specified States: 1982 and 1977—Con.

[Million dollars. Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in table 2. Also, product classes are not shown if they are miscellaneous or "not specified by type" classes. Statistics for some States are withheld because they are either less than $2 million in product class shipments or they disclose data for individual companies in 1982. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| Product class and geographic area | 1982 value of product shipments | 1977 value of product shipments | Product class and geographic area | 1982 value of product shipments | 1977 value of product shipments |
|---|---|---|---|---|---|
| **35699, GENERAL INDUSTRIAL MACHINERY, N.E.C.** | | | **35699, GENERAL INDUSTRIAL MACHINERY, N.E.C.**—Con. | | |
| **United States** | **1 680.4** | **1 311.6** | Kentucky | 12.8 | 12.0 |
| | | | Maryland | 12.5 | (EE) |
| | | | Massachusetts | 39.8 | 62.4 |
| | | | Michigan | 110.0 | 119.2 |
| | | | Minnesota | 7.2 | 20.2 |
| Alabama | 8.9 | 7.8 | Missouri | 31.9 | 21.1 |
| California | 228.9 | 139.1 | New Jersey | 96.3 | 53.6 |
| Colorado | 4.9 | 4.1 | New York | 114.4 | 127.0 |
| Connecticut | 98.1 | 68.5 | North Carolina | 40.7 | 28.0 |
| Florida | 7.5 | 5.1 | Ohio | 143.5 | 123.4 |
| | | | Oklahoma | 41.8 | 19.0 |
| | | | Pennsylvania | 158.5 | 143.1 |
| Georgia | 30.6 | 17.9 | Tennessee | 9.8 | 10.4 |
| Illinois | 100.7 | 89.0 | Texas | 81.8 | 51.5 |
| Indiana | 36.9 | 28.2 | Virginia | 17.1 | 14.2 |
| Iowa | 7.9 | 4.4 | Washington | 2.8 | 5.6 |
| Kansas | 53.8 | 9.1 | Wisconsin | 42.8 | 47.1 |

Note: For 1977, the following value ranges (in million dollars) substitute for actual figures withheld to avoid disclosing data for individual companies: AA—less than $2.0 but not 0; BB—$2.0 to $4.9; CC—$5.0 to $9.9; EE—$10.0 to $19.9; FF—$20.0 to $49.9; GG—$50.0 or more.

## Table 6c. Product Classes—Value Shipped by All Producers: 1982 and Earlier Years

[Million dollars. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

| 1982 product code | Product class | 1982 | 1981[1] | 1980[1] | 1979[1] | 1978[1] | 1977 | 1972 | 1967 |
|---|---|---|---|---|---|---|---|---|---|
| 3561- | **Pumps and pumping equipment** | **5 723.1** | **6 301.1** | **5 195.2** | **4 696.6** | **4 036.9** | **3 522.8** | **1 632.9** | **1 375.0** |
| 35611 | Industrial pumps, except fluid power pumps | 1 916.9 | 2 103.0 | 1 873.3 | 1 623.5 | 1 507.7 | 1 386.7 | 611.9 | 436.9 |
| 35613 | Domestic water systems | 215.5 | 289.6 | 260.3 | 259.8 | 224.0 | 223.8 | 151.1 | 140.3 |
| 35615 | Pumps, n.e.c. | 1 048.2 | 1 253.9 | 788.0 | 727.5 | 500.6 | 395.7 | 186.4 | 126.2 |
| 35617 | Fluid power pumps, except aerospace | 648.5 | 834.7 | 697.6 | 717.6 | 607.3 | 488.9 | 261.6 | 218.6 |
| 35618 | Aerospace fluid power pumps | 81.3 | | | | | | | |
| 3561A | Parts for fluid power pumps, except aerospace | 218.6 | | | | | | | |
| 3561B | Parts for aerospace fluid power pumps | 103.8 | 1 701.7 | 1 479.2 | 1 264.6 | 996.9 | 861.6 | 346.5 | 383.6 |
| 3561C | Parts for pumps, except fluid power | 1 298.9 | | | | | | | |
| 35610 | Pumps and compressors, n.s.k. | 191.4 | 118.2 | 96.9 | 103.6 | (S) | 166.1 | 75.4 | 69.4 |
| 3562- | **Ball and roller bearings** | **2 973.1** | **3 759.8** | **3 351.6** | **3 315.5** | **2 794.5** | **2 444.5** | **1 418.7** | **1 292.0** |
| 35621 | Ball bearings, unmounted | 1 087.1 | 1 344.9 | 1 200.0 | 1 065.7 | 861.8 | 749.9 | 474.2 | 472.7 |
| 35622 | Tapered roller bearings, unmounted | 710.9 | 972.7 | 911.1 | 989.7 | 829.6 | 748.6 | 420.0 | 367.7 |
| 35623 | Roller bearings, except tapered, unmounted | 614.1 | 709.6 | 626.4 | 602.4 | 539.2 | 472.9 | 280.9 | 225.0 |
| 35624 | Mounted bearings, except plain | 241.7 | 275.8 | 262.0 | 262.9 | 225.5 | 213.1 | 100.9 | 96.0 |
| 35629 | Parts for ball and roller bearings | 298.4 | 403.3 | 344.4 | 383.9 | 317.4 | 243.1 | 138.2 | 118.7 |
| 35620 | Ball and roller bearings, n.s.k. | 20.9 | 53.5 | 7.6 | 10.9 | 20.9 | 16.8 | 4.5 | 12.1 |
| 3563- | **Air and gas compressors** | **2 846.2** | **2 962.8** | **2 693.1** | **2 449.1** | **2 182.7** | **1 923.4** | **722.7** | **(NA)** |
| 35631 | Air and gas compressors and vacuum pumps | 1 677.1 | 1 724.1 | 1 552.7 | 1 470.9 | 1 362.2 | 1 290.3 | 480.8 | 501.0 |
| 35632 | Parts for air and gas compressors | 652.7 | 649.8 | 647.9 | 562.9 | 502.9 | 384.1 | 148.4 | (NA) |
| 35635 | Industrial spraying equipment | 442.0 | 537.6 | 466.8 | 387.6 | 287.6 | 221.6 | 93.5 | 71.3 |
| 35630 | Air and gas compressors, n.s.k. | 74.4 | 51.3 | 25.7 | 27.7 | 30.0 | 27.4 | – | (NA) |
| 3564- | **Blowers and fans** | **1 994.5** | **1 877.7** | **1 901.9** | **1 702.9** | **1 511.4** | **1 422.3** | **682.0** | **499.1** |
| 35643 | Centrifugal fans and blowers | 556.9 | 500.0 | 526.0 | 501.8 | 407.0 | 354.1 | 181.0 | 294.9 |
| 35644 | Propeller and axial fans, and power roof ventilators | 464.8 | 451.2 | 452.1 | 402.1 | 353.3 | 303.3 | 159.9 | |
| 35645 | Air purification equipment for environmental systems | 425.5 | 392.2 | 411.9 | 340.9 | 302.9 | 260.7 | 121.3 | 182.5 |
| 35646 | Air purification equipment for industrial use | 425.6 | 339.8 | 367.6 | 337.9 | 351.7 | 381.7 | 198.0 | |
| 35640 | Blowers and fans, n.s.k. | 121.7 | 194.5 | 144.3 | 120.1 | (S) | 122.5 | 21.8 | 21.7 |
| 35650 | **Industrial patterns, except shoe patterns** | 561.5 | 565.6 | 552.2 | 545.5 | 438.7 | 411.9 | 234.4 | 233.7 |
| 35660 | **Speed changers, drives, and gears** | **1 557.4** | **1 652.7** | **1 671.3** | **1 487.0** | **1 253.6** | **1 199.7** | **593.0** | 569.3 |
| 3567- | **Industrial furnaces and ovens** | **1 026.8** | **1 080.0** | **1 042.1** | 950.4 | 793.7 | **707.1** | **341.1** | 415.9 |
| 35671 | Electric industrial furnaces, ovens, and kilns | 295.2 | 204.0 | 225.2 | 191.8 | 175.3 | 140.3 | 67.5 | 90.8 |
| 35672 | Fuel-fired industrial furnaces, ovens, and kilns | 248.6 | 280.0 | 277.7 | 250.0 | 178.1 | 144.4 | 97.2 | 155.7 |
| 35674 | High frequency induction and dielectric heating equipment | 131.9 | 180.7 | 183.9 | 192.0 | 141.6 | 133.4 | 147.0 | 149.1 |
| 35675 | Electrical heating equipment for industrial use, n.e.c. | 289.1 | 295.3 | 257.8 | 232.5 | 211.5 | 204.1 | | |
| 35670 | Industrial furnaces and ovens, n.s.k. | 62.0 | 119.9 | 97.4 | 84.0 | 87.2 | 84.9 | 29.4 | 20.3 |
| 3568- | **Power transmission equipment, n.e.c.** | **1 985.6** | **2 606.3** | **2 436.8** | **2 291.8** | **2 028.1** | **1 710.9** | **975.0** | **604.5** |
| 35681 | Plain bearings and bushings | 385.0 | 451.1 | 424.0 | 359.8 | 318.2 | 275.1 | 121.0 | (NA) |
| 35683 | Mechanical power transmission equipment, n.e.c. | 1 556.3 | 2 116.0 | 1 980.5 | 1 918.7 | 1 696.5 | 1 419.1 | 854.0 | (NA) |
| 35680 | Power transmission equipment, n.e.c., n.s.k. | 44.3 | 39.1 | 32.3 | 13.3 | 13.4 | 16.6 | – | (NA) |
| 3569- | **General industrial machinery, n.e.c.** | **4 410.7** | **4 264.1** | **4 008.1** | **3 560.8** | **3 051.4** | **2 689.4** | **1 132.8** | 899.8 |
| 35691 | Packing, packaging, and bottling machinery | 885.2 | 650.5 | 590.1 | 554.0 | 517.9 | 440.5 | 177.4 | (NA) |
| 35693 | Filters and strainers, except fluid power | 1 137.4 | | | | | | | |
| 35694 | Filters for hydraulic fluid power systems, excluding aircraft type | 114.5 | 1 098.1 | 972.8 | 871.5 | 740.9 | 630.0 | 275.4 | (NA) |
| 35695 | Filters for pneumatic fluid power systems, excluding aircraft type | 60.2 | | | | | | | |
| 35696 | Filters for aircraft fluid power (hydraulic and pneumatic) systems | 41.0 | | | | | | | |
| 35699 | General industrial machinery, n.e.c. | 1 680.4 | 2 102.4 | 2 055.1 | 1 786.2 | 1 461.6 | 1 311.6 | 535.5 | (NA) |
| 35690 | General industrial machinery, n.e.c., n.s.k. | 492.0 | 413.0 | 390.1 | 349.1 | (S) | 307.3 | 144.5 | (NA) |

[1]Figures are estimates derived from a representative sample of manufacturing establishments canvassed in annual survey of manufactures and, therefore, may differ from results that would be obtained from a complete canvass of all manufacturing establishments. Standard errors associated with estimates are published in annual survey of manufactures volumes for this period.

# Table 7. Materials Consumed by Kind: 1982 and 1977

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

| 1982 material code | Material | 1982 | | 1977 | |
|---|---|---|---|---|---|
| | | Quantity[1] | Delivered cost (million dollars) | Quantity[1] | Delivered cost (million dollars) |
| | **INDUSTRY 3561, PUMPS AND PUMPING EQUIPMENT** | | | | |
| | **Materials, parts, containers, and supplies** | **(X)** | **2 379.7** | **(X)** | **1 489.1** |
| | Mill shapes and forms, except castings and forgings: | | | | |
| | Carbon steel: | | | | |
| 331012 | Sheet and strip — 1,000 s tons | *31.9 | 21.9 | *19.9 | 7.4 |
| 331011 | Bars and bar shapes — do | (S) | 49.8 | (S) | 22.2 |
| 331013 | Plates — do | *45.3 | 29.5 | (S) | 16.0 |
| 331015 | Structural shapes — do | (S) | 13.6 | (S) | 3.8 |
| 331055 | All other carbon steel mill shapes and forms — do | 33.9 | 29.3 | **27.2 | 14.7 |
| | Alloy steel, except stainless: | | | | |
| 331021 | Bars and bar shapes — do | (S) | 31.0 | *32.0 | 24.2 |
| 331029 | All other alloy steel mill shapes and forms — do | 11.9 | 11.9 | 10.9 | 6.8 |
| | Stainless steel: | | | | |
| 331033 | Sheet and strip — do | (S) | 9.7 | (S) | 6.2 |
| 331050 | All other stainless steel mill shapes and forms — do | **18.0 | 46.8 | **8.6 | 22.6 |
| 335792 | Insulated copper wire and cable, except magnet wire (quantity of copper content) — mil lb | **19.3 | 32.5 | (S) | .8 |
| | Copper and copper-base alloy: | | | | |
| 335102 | Rod, bar, and mechanical wire, including extruded and/or drawn shapes — do | **36.0 | 14.9 | *4.9 | 9.7 |
| 335143 | Plate, sheet, and strip, including military cups and discs — do | 5.1 | 6.6 | .7 | .9 |
| 335152 | Pipe and tube — do | 18.7 | 18.7 | *1.8 | 3.3 |
| | Aluminum and aluminum-base alloy: | | | | |
| 335405 | Extruded shapes, including extruded rod, bar, pipe, tube, etc. — do | *7.2 | 9.9 | *3.2 | 1.3 |
| 335011 | All other aluminum mill shapes and forms (wire, rolled rod and bar, powder, welded tubing, sheet, plate, foil, etc.) — do | 7.9 | 12.2 | (S) | 2.1 |
| 335609 | Nonferrous metal mill shapes and forms, except copper and aluminum — 1,000 s tons | (S) | 5.7 | (S) | .4 |
| | Primary metals: | | | | |
| 331051 | Pig iron, excluding silvery iron — do | 122.2 | 21.4 | *17.7 | 3.9 |
| 333122 | Copper and copper-base alloy refinery shapes — do | 5.6 | 8.3 | (S) | 4.6 |
| 339915 | Metal powders — mil lb | *5.5 | 15.4 | (S) | 1.1 |
| 190023 | Iron and steel scrap, excluding home scrap — 1,000 s tons | 40.4 | 14.5 | *43.4 | 4.0 |
| | Castings (rough and semifinished): | | | | |
| 332011 | Iron (gray and malleable): | | | | |
| | Purchased — do | (S) | 213.9 | **207.6 | 163.9 |
| | Produced and consumed — do | 16.3 | (X) | (S) | (X) |
| 332045 | Steel: | | | | |
| | Purchased — do | (S) | 116.5 | **21.8 | 118.2 |
| | Produced and consumed — do | .1 | (X) | (S) | (X) |
| 336100 | Aluminum and aluminum-base alloy: | | | | |
| | Purchased — mil lb | (S) | 45.8 | **16.8 | 24.6 |
| | Produced and consumed — do | (Z) | (X) | (S) | (X) |
| 336200 | Copper and copper-base alloy: | | | | |
| | Purchased — do | (S) | 31.4 | (S) | 34.4 |
| | Produced and consumed — do | .4 | (X) | (S) | (X) |
| 336902 | Other nonferrous: | | | | |
| | Purchased — do | (S) | 21.5 | (X) | [3] |
| | Produced and consumed — do | (Z) | (X) | (X) | (X) |
| 346200 | Iron and steel forgings: | | | | |
| | Purchased — 1,000 s tons | **13.1 | 35.5 | (S) | 23.9 |
| | Produced and consumed — do | .4 | (X) | (S) | (X) |
| 344301 | Metal tanks, heat exchangers, steam condensers, and other boiler products, fabricated steel plate, and weldments | (X) | 47.6 | (X) | 9.6 |
| 346701 | Metal stampings — 1,000 s tons | **10.1 | 20.8 | (X) | [3] |
| 345001 | Bolts, nuts, screws, rivets, and screw machine products | (X) | 55.4 | (X) | 24.1 |
| 349402 | Fabricated metal pipe, valves, and pipe fittings | (X) | 42.0 | (X) | 11.6 |
| 354501 | Cutting tools for machine tools | (X) | 35.2 | (X) | 11.4 |
| 356101 | Pumps and pump parts used as materials | (X) | 128.6 | (S) | 49.8 |
| 356301 | Air and gas compressors, except refrigeration — thousands | **8.5 | 4.2 | (S) | (Z) |
| 360101 | Electrical transmission, distribution, and control equipment | (X) | 26.5 | (X) | 21.9 |
| | Engines: | | | | |
| 351920 | Diesel and semidiesel: | | | | |
| | Purchased — thousands | *6.9 | 24.3 | *1.0 | 8.6 |
| | Produced and consumed — do | (Z) | (X) | (S) | (X) |
| 351901 | Gasoline and other carburetor engines: | | | | |
| | Purchased — do | **278.6 | 19.2 | (S) | 10.5 |
| | Produced and consumed — do | .2 | (X) | (S) | (X) |
| | Electric motors and generators: | | | | |
| 362115 | Fractional horsepower electric motor (less than 1 hp), excluding timing motors: | | | | |
| | Purchased — do | (S) | 127.1 | (S) | 68.0 |
| | Produced and consumed — do | 9.9 | (X) | (S) | (X) |
| 362120 | Integral horsepower motors and generators (1 hp or more): | | | | |
| | Purchased — do | (S) | 159.3 | (S) | 115.2 |
| | Produced and consumed — do | - | (X) | (S) | (X) |
| | Bearings: | | | | |
| 356218 | Ball | (X) | 39.1 | (X) | 14.0 |
| 356201 | Roller | (X) | 40.3 | (X) | 13.0 |
| 356810 | Plain bearings and bushings | (X) | 35.1 | (X) | 6.0 |
| 356601 | Speed changers, drives, and gears | (X) | 34.5 | (X) | 10.2 |
| 265001 | Paperboard containers, boxes, and corrugated paperboard — 1,000 s tons | (S) | 26.9 | (X) | [3] |
| 304101 | Rubber and plastics hose and belting | (X) | 16.9 | (X) | [3] |
| 306902 | Fabricated rubber products, except tires, tubes, belts, hosing, and gaskets | (X) | 39.4 | (X) | 11.2 |
| 307902 | Fabricated plastics products, except gaskets, hose, and belting | (X) | 41.2 | (X) | 15.6 |
| 329300 | Gaskets (all types) and asbestos packing | (X) | 32.0 | (X) | [3] |
| 357301 | Electronic computing equipment and parts | (X) | 8.2 | (X) | [3] |
| 970099 | All other materials and components, parts, containers, and supplies | (X) | 327.6 | (X) | [3]323.6 |
| 971000 | Materials, parts, containers, and supplies, n.s.k.[2] | (X) | 180.1 | (X) | 243.8 |

See footnotes at end of table.

## Table 7. **Materials Consumed by Kind: 1982 and 1977**—Con.

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

| 1982 material code | Material | | 1982 Quantity[1] | 1982 Delivered cost (million dollars) | 1977 Quantity[1] | 1977 Delivered cost (million dollars) |
|---|---|---|---|---|---|---|
| | **INDUSTRY 3562, BALL AND ROLLER BEARINGS** | | | | | |
| | **Materials, parts, containers, and supplies** | | **(X)** | **1 056.2** | **(NA)** | **1 018.6** |
| | Mill shapes and forms, except castings and forgings: | | | | | |
| | Carbon steel: | | | | | |
| 331011 | Bars and bar shapes | 1,000 s tons | *49.8 | 44.8 | 52.5 | 42.4 |
| 331012 | Sheet and strip | do | *54.0 | 41.0 | [4]119.4 | [4]47.5 |
| 331017 | Wire and wire products | do | 34.0 | 28.0 | 24.3 | 14.6 |
| 331013 | Plates | do | 11.1 | 7.2 | ([4]) | ([4]) |
| 331058 | All other carbon steel mill shapes and forms | do | (X) | 19.6 | 46.5 | 43.7 |
| | Alloy steel, except stainless: | | | | | |
| 331021 | Bars and bar shapes | do | *62.2 | 76.4 | 131.1 | 119.5 |
| 331029 | All other alloy steel mill shapes and forms | do | 125.5 | 168.3 | 201.1 | 192.9 |
| | Stainless steel: | | | | | |
| 331033 | Sheet and strip | do | 7.8 | 23.6 | (S) | .3 |
| 331050 | All other stainless steel mill shapes and forms | do | | | 2.1 | 5.7 |
| | Copper and copper-base alloy: | | | | | |
| 335102 | Rod, bar, and mechanical wire, including extruded and/or drawn shapes | mil lb | 10.2 | 9.1 | 1.8 | 2.5 |
| 335143 | Plate, sheet, and strip, including military cups and discs | do | | | (D) | (D) |
| 335152 | Pipe and tube | do | 1.4 | 1.3 | (D) | (D) |
| 333122 | Copper and copper-base alloy refinery shapes | 1,000 s tons | .8 | 1.6 | (D) | (D) |
| | Scrap, excluding home scrap: | | | | | |
| 190023 | Iron and steel | do | 11.7 | 3.0 | (S) | .8 |
| 190024 | Copper and copper-base alloy | do | 1.5 | 1.2 | – | – |
| | Castings (rough and semifinished): | | | | | |
| 332011 | Iron (gray and malleable): | | | | | |
| | Purchased | 1,000 s tons | 42.8 | 35.1 | 29.7 | 25.3 |
| | Produced and consumed | do | 1.0 | (X) | (S) | (X) |
| 332045 | Steel: | | | | | |
| | Purchased | do | 7.8 | 10.8 | *1.7 | 3.0 |
| | Produced and consumed | do | – | (X) | (S) | (X) |
| 336100 | Aluminum and aluminum-base alloy: | | | | | |
| | Purchased | mil lb | .5 | 1.2 | (D) | (D) |
| | Produced and consumed | do | – | (X) | (S) | (X) |
| 336200 | Copper and copper-base alloy: | | | | | |
| | Purchased | do | (S) | ([5]) | 3.0 | 5.2 |
| | Produced and consumed | do | – | (X) | (S) | (X) |
| 336902 | Other nonferrous: | | | | | |
| | Purchased | do | (S) | [5]10.0 | (X) | ([6]) |
| | Produced and consumed | do | – | (X) | (X) | (X) |
| 339915 | Metal powders | do | 1.7 | 2.3 | (D) | (D) |
| | Iron and steel forgings: | | | | | |
| 346201 | Cold: | | | | | |
| | Purchased | 1,000 s tons | *24.7 | 53.4 | **12.4 | 18.6 |
| | Produced and consumed | do | .7 | (X) | (S) | (X) |
| 346209 | Other: | | | | | |
| | Purchased | do | 17.5 | 40.4 | 29.6 | 45.9 |
| | Produced and consumed | do | .6 | (X) | (S) | (X) |
| 345001 | Bolts, nuts, screws, rivets, and screw machines products | | (X) | 9.2 | (X) | 2.6 |
| 354501 | Cutting tools for machine tools | | (X) | 13.8 | (X) | 5.7 |
| | Bearings: | | | | | |
| 356218 | Ball | | (X) | 20.9 | (X) | 15.3 |
| 356201 | Roller | | (X) | 34.5 | (X) | 21.5 |
| 356295 | Balls, rollers, cages, collars, races, and other antifriction bearing components and parts | | (X) | 178.4 | (X) | 166.3 |
| 329101 | Grinding wheels and other abrasive products, except industrial diamonds | | (X) | 17.6 | (X) | 11.7 |
| | Electric motors and generators: | | | | | |
| | Fractional horsepower electric motors (less than 1 hp): | | | | | |
| 362110 | Timing motors, synchronous and subsynchronous: | | | | | |
| | Purchased | thousands | 13.2 | 1.3 | (X) | ([6]) |
| | Produced and consumed | do | – | (X) | (X) | (X) |
| 362115 | Other fractional horsepower electric motors, excluding timing motors: | | | | | |
| | Purchased | do | 30.3 | 3.6 | (X) | ([6]) |
| | Produced and consumed | do | – | (X) | (X) | (X) |
| 362120 | Integral horsepower motors and generators (1 hp or more): | | | | | |
| | Purchased | do | 9.2 | 1.3 | (X) | ([6]) |
| | Produced and consumed | do | – | (X) | (X) | (X) |
| 970099 | All other materials and components, parts, containers, and supplies | | (X) | 178.8 | (X) | [6]197.7 |
| 971000 | Materials, parts, containers, and supplies, n.s.k.[2] | | (X) | 18.5 | (X) | 29.9 |
| | **INDUSTRY 3563, AIR AND GAS COMPRESSORS** | | | | | |
| | **Materials,parts, containers, and supplies** | | **(X)** | **1 425.7** | **(X)** | 858.8 |
| | Mill shapes and forms, except castings and forgings: | | | | | |
| | Carbon steel: | | | | | |
| 331012 | Sheet and strip | 1,000 s tons | (S) | 26.9 | *27.0 | 10.4 |
| 331011 | Bars and bar shapes | do | **46.8 | 29.0 | (S) | 6.8 |
| 331013 | Plates | do | (S) | 21.3 | *27.3 | 11.7 |
| 331015 | Structural shapes | do | *27.5 | 14.9 | *9.4 | 4.6 |
| 331055 | All other carbon steel mill shapes and forms | do | (S) | 13.7 | (S) | 4.6 |
| | Alloy steel, except stainless: | | | | | |
| 331021 | Bars and bar shapes | do | (S) | 23.9 | 6.6 | 5.3 |
| 331029 | All other alloy steel mill shapes and forms | do | (S) | 11.5 | *2.1 | 2.1 |
| | Stainless steel: | | | | | |
| 331033 | Sheet and strip | do | **7.4 | 17.3 | .8 | 1.3 |
| 331050 | All other stainless steel mill shapes and forms | do | *7.2 | 17.8 | (S) | 4.4 |
| | Copper and copper-base alloy: | | | | | |
| 335792 | Insulated copper wire and cable, except magnet wire (quantity of copper content) | mil lb | 6.9 | 13.7 | *.3 | 1.3 |
| 335102 | Rod, bar, and mechanical wire, including extruded and/or drawn shapes | do | **6.8 | 12.1 | (S) | 3.2 |
| 335143 | Plate, sheet, and strip, including military cups and discs | do | 9.7 | 13.4 | | |

See footnotes at end of table.

# Table 7. **Materials Consumed by Kind: 1982 and 1977**—Con.

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

| 1982 material code | Material | 1982 Quantity[1] | 1982 Delivered cost (million dollars) | 1977 Quantity[1] | 1977 Delivered cost (million dollars) |
|---|---|---|---|---|---|
| | **INDUSTRY 3563, AIR AND GAS COMPRESSORS —Con.** | | | | |
| | Mill shapes and forms, except castings and forgings —Con. | | | | |
| | Copper and copper-base alloy —Con. | | | | |
| 335152 | Pipe and tube ---- mil lb | *4.0 | 4.9 | *1.1 | 1.4 |
| | Aluminum and aluminum-base alloy: | | | | |
| 335405 | Extruded shapes, including extruded rod, bar, pipe, tube, etc. ---- do | 2.8 | 4.5 | (S) | .9 |
| 335011 | All other aluminum mill shapes and forms (wire, rolled rod and bar, powder, welded tubing, sheet, plate, foil, etc.) ---- do | 4.8 | 7.2 | (S) | 2.5 |
| 335609 | Nonferrous metal mill shapes and forms, except copper and aluminum ---- 1,000 s tons | (S) | 7.1 | (D) | (D) |
| | Primary metals: | | | | |
| 331051 | Pig iron, excluding silvery iron ---- do | 29.4 | 7.9 | (D) | (D) |
| 333122 | Copper and copper-base alloy refinery shapes ---- do | (D) | (7) | (D) | (D) |
| 339915 | Metal powders ---- mil lb | (D) | (7) | (S) | .6 |
| 190023 | Iron and steel scrap, excluding home scrap ---- 1,000 s tons | 14.3 | 5.8 | 3.4 | .5 |
| | Castings (rough and semifinished): | | | | |
| 332011 | Iron (gray and malleable): | | | | |
| | Purchased ---- do | (S) | 93.9 | *73.5 | 70.1 |
| | Produced and consumed ---- do | 5.5 | (X) | (S) | (X) |
| 332045 | Steel: | | | | |
| | Purchased ---- do | (S) | 16.0 | (S) | 11.9 |
| | Produced and consumed ---- do | - | (X) | (S) | (X) |
| 336100 | Aluminum and aluminum-base alloy: | | | | |
| | Purchased ---- mil lb | (S) | 26.7 | *10.1 | 15.5 |
| | Produced and consumed ---- do | .6 | (X) | (S) | (X) |
| 336200 | Copper and copper-base alloy: | | | | |
| | Purchased ---- do | (S) | 5.9 | (S) | 3.4 |
| | Produced and consumed ---- do | (Z) | (X) | (S) | (X) |
| 336902 | Other nonferrous: | | | | |
| | Purchased ---- do | (S) | 5.1 | (X) | (3) |
| | Produced and consumed ---- do | - | (X) | (X) | (X) |
| 346200 | Iron and steel forgings: | | | | |
| | Purchased ---- 1,000 s tons | (S) | 19.0 | *7.7 | 18.5 |
| | Produced and consumed ---- do | - | (X) | (S) | (X) |
| 344301 | Metal tanks, heat exchangers, steam condensers and other boiler products, fabricated steel plate, and weldments ---- | (X) | 68.0 | (X) | 40.0 |
| 346701 | Metal stampings ---- 1,000 s tons | *6.2 | 16.7 | (X) | (3) |
| 345001 | Bolts, nuts, screws, rivets, and screw machine products ---- | (X) | 26.5 | (X) | 13.8 |
| 349402 | Fabricated metal pipe, valves, and pipe fittings ---- | (X) | 49.2 | (X) | 9.0 |
| 354501 | Cutting tools for machine tools ---- | (X) | 16.6 | (X) | 5.4 |
| 356101 | Pumps and pump parts used as materials ---- | (X) | 34.5 | (S) | 12.9 |
| 356301 | Air and gas compressors, except refrigeration ---- thousands | *48.4 | 32.4 | (S) | 23.1 |
| 360101 | Electrical transmission, distribution, and control equipment ---- | (X) | 22.3 | (X) | 12.2 |
| | Engines: | | | | |
| 351920 | Diesel and semidiesel: | | | | |
| | Purchased ---- thousands | **10.1 | 42.6 | *7.7 | 38.3 |
| | Produced and consumed ---- do | (Z) | (X) | (S) | (X) |
| 351901 | Gasoline and other carburetor engines: | | | | |
| | Purchased ---- do | **181.9 | 28.6 | (S) | 15.8 |
| | Produced and consumed ---- do | 5.2 | (X) | (S) | (X) |
| | Electric motors and generators: | | | | |
| 362115 | Fractional horsepower electric motor (less than 1 hp), excluding timing motors: | | | | |
| | Purchased ---- do | (S) | 41.8 | 823.4 | 27.4 |
| | Produced and consumed ---- do | 4.3 | (X) | (S) | (X) |
| 362120 | Integral horsepower motors and generators (1 hp or more): | | | | |
| | Purchased ---- do | (S) | 79.2 | (S) | 48.5 |
| | Produced and consumed ---- do | - | (X) | (S) | (X) |
| | Bearings: | | | | |
| 356218 | Ball ---- | (X) | 21.3 | (X) | 5.0 |
| 356201 | Roller ---- | (X) | 14.4 | (X) | 3.4 |
| 356810 | Plain bearings and bushings ---- | (X) | 17.7 | (X) | 7.4 |
| 356601 | Speed changers, drives, and gears ---- | (X) | 28.1 | (X) | 13.6 |
| 265001 | Paperboard containers, boxes, and corrugated paperboard -- 1,000 s tons | **16.7 | 13.9 | (X) | (3) |
| 304101 | Rubber and plastics hose and belting ---- | (X) | 15.1 | (X) | (3) |
| 306902 | Fabricated rubber products (except tires, tubes, belts, hosing, and gaskets) ---- | (X) | 8.3 | (X) | 1.1 |
| 307902 | Fabricated plastics products (except gaskets, hose, and belting) ---- | (X) | 18.7 | (X) | 7.0 |
| 329300 | Gaskets (all types) and asbestos packing ---- | (X) | 19.4 | (X) | (3) |
| 357301 | Electronic computing equipment and parts ---- | (X) | 17.2 | (X) | (3) |
| 970099 | All other materials and components, parts, containers, and supplies ---- | (X) | [7]277.9 | (X) | [3]291.8 |
| 971000 | Materials, parts, containers, and supplies, n.s.k.[2] ---- | (X) | 95.8 | (X) | 102.1 |
| | **INDUSTRY 3564, BLOWERS AND FANS** | | | | |
| | **Materials, parts, containers, and suppiles ----** | **(X)** | **854.8** | **(X)** | **515.1** |
| | Mill shapes and forms, except castings and forgings: | | | | |
| | Carbon steel: | | | | |
| 331011 | Bars and bar shapes ---- 1,000 s tons | *42.7 | 24.6 | (S) | 7.8 |
| 331012 | Sheet and strip ---- do | **110.3 | 63.2 | (S) | 47.3 |
| 331013 | Plates ---- do | *115.2 | 55.9 | **90.2 | 30.8 |
| 331015 | Structural shapes ---- do | **39.6 | 26.7 | (S) | 10.3 |
| 331017 | Wire and wire products ---- do | **49.7 | 16.7 | (S) | 2.5 |
| 331019 | All other carbon steel mill shapes and forms ---- do | **16.9 | 19.9 | (S) | 5.7 |
| 331020 | Alloy steel, except stainless ---- do | **15.1 | 17.9 | (S) | 4.5 |
| | Steinless steel: | | | | |
| 331033 | Sheet end strip ---- do | *10.9 | 24.0 | (S) | 6.8 |
| 331050 | All other steinless steel mill shapes and forms ---- do | 4.2 | 15.0 | (S) | 2.2 |

See footnotes at end of table.

## Table 7. **Materials Consumed by Kind: 1982 and 1977**—Con.

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

| 1982 material code | Material | 1982 Quantity[1] | 1982 Delivered cost (million dollars) | 1977 Quantity[1] | 1977 Delivered cost (million dollars) |
|---|---|---|---|---|---|
| | **INDUSTRY 3564, BLOWERS AND FANS**—Con. | | | | |
| | Mill shapes and forms, except castings and forgings—Con. | | | | |
| | Copper and copper-base alloy: | | | | |
| 335102 | Rod, bar, and mechanical wire, including extruded and/or drawn shapes ---- mil lb | 4.3 | 9.8 | (S) | 1.0 |
| 335143 | Plate, sheet, and strip ---- do | *6.6 | 8.3 | (S) | .2 |
| 335152 | Pipe and tube ---- do | 12.5 | 12.6 | (S) | 1.3 |
| | Aluminum and aluminum-base alloy: | | | | |
| 335301 | Sheet, plate, and foil ---- do | *25.0 | 28.7 | **11.7 | 9.8 |
| 335006 | All other extruded shapes (wire, rod, bar, pipe, tubing, etc.) ---- do | (S) | 10.3 | (S) | 3.3 |
| | Castings (rough and semifinished): | | | | |
| 332011 | Iron (gray and malleable): | | | | |
| | Purchased ---- do | 21.4 | 22.4 | (S) | 14.6 |
| | Produced and consumed ---- do | 1.0 | (X) | (S) | (X) |
| 332045 | Steel: | | | | |
| | Purchased ---- do | 5.6 | 12.8 | (X) | (8) |
| | Produced and consumed ---- do | - | (X) | - | (X) |
| 336100 | Aluminum and aluminum-base alloy: | | | | |
| | Purchased ---- do | **7.5 | 17.0 | (S) | 6.8 |
| | Produced and consumed ---- do | .1 | (X) | (S) | (X) |
| 336200 | Copper and copper-base alloy: | | | | |
| | Purchased ---- do | 3.7 | 8.5 | (S) | .1 |
| | Produced and consumed ---- do | - | (X) | (S) | (X) |
| 336902 | Other nonferrous: | | | | |
| | Purchased ---- do | 4.1 | 8.3 | (X) | (8) |
| | Produced and consumed ---- do | - | (X) | (X) | (X) |
| 345001 | Bolts, nuts, screws, rivets, and screw machine products ---- | (X) | 23.4 | (X) | 7.4 |
| | Bearings: | | | | |
| 356218 | Ball ---- | (X) | 15.0 | (X) | 5.7 |
| 356201 | Roller ---- | (X) | 11.6 | (X) | 2.7 |
| | Electric motors and generators: | | | | |
| | Fractional horsepower electric motors (less than 1 hp): | | | | |
| 362110 | Timing motors, synchronous and subsynchronous: | | | | |
| | Purchased ---- thousands | 140.4 | 9.9 | (S) | .7 |
| | Produced and consumed ---- do | - | (X) | (S) | (X) |
| 362115 | Other fractional horsepower electric motors: | | | | |
| | Purchased ---- do | (S) | 36.1 | **639.9 | 14.8 |
| | Produced and consumed ---- do | .1 | (X) | (S) | (X) |
| 362120 | Intergral horsepower motors and generators: | | | | |
| | Purchased ---- do | (S) | 38.2 | (S) | 23.1 |
| | Produced and consumed ---- do | 3.1 | (X) | (S) | (X) |
| 382201 | Automatic temperature controls (thermostats, regulators, etc.) ---- | (X) | 14.3 | (X) | 3.6 |
| 304101 | Rubber and plastics hose and belting ---- | (X) | 13.6 | (X) | (8) |
| 970099 | All other materials and components, parts, containers, and supplies ---- | (X) | 176.3 | (X) | 8169.9 |
| 971000 | Materials, parts, containers, and supplies, n.s.k.[2] ---- | (X) | 113.8 | (X) | 132.2 |
| | **INDUSTRY 3565, INDUSTRIAL PATTERNS** | | | | |
| | **Materials, parts, containers, and supplies ----** | **(X)** | **74.1** | **(X)** | **53.4** |
| | Mill shapes and forms, except castings and forgings: | | | | |
| 331001 | Carbon steel ---- 1,000 s tons | (S) | 1.7 | (S) | 2.5 |
| 331020 | Alloy steel, except stainless ---- do | *1.0 | 1.0 | (S) | .4 |
| 331031 | Stainless steel ---- do | **.5 | 1.6 | (S) | .1 |
| 335105 | Copper and copper-base alloy ---- mil lb | .9 | 1.3 | (S) | .1 |
| 335001 | Aluminum and aluminum-base alloy ---- do | **2.2 | 2.3 | (S) | .5 |
| | Castings (rough and semifinished): | | | | |
| 332011 | Iron (gray and malleable) ---- 1,000 s tons | (S) | 5.0 | **3.0 | 4.1 |
| 332045 | Steel ---- do | (S) | 3.5 | (S) | 1.3 |
| 336100 | Aluminum and aluminum-base alloy ---- mil lb | (S) | 3.7 | (S) | 2.1 |
| 336200 | Copper and copper-based alloy ---- do | **1.0 | 1.3 | (Z) | (Z) |
| 336902 | Other nonferrous ---- do | 2.2 | 1.1 | (X) | (9) |
| 242101 | Rough and dressed lumber ---- 1,000 bd ft | **8.9 | 6.8 | (X) | (9) |
| 307903 | Plastics products consumed in the form of sheets, rods, tubes, and other shapes ---- | (X) | 3.1 | (X) | (9) |
| 970099 | All other materials and components, parts, containers, and supplies consumed ---- | (X) | 8.4 | (X) | 913.1 |
| 971000 | Materials, parts, containers, supplies, n.s.k.[2] ---- | (X) | 33.3 | (X) | 29.2 |
| | **INDUSTRY 3566, SPEED CHANGERS, DRIVES, AND GEARS** | | | | |
| | **Materials, parts, containers, and supplies ----** | **(X)** | **462.1** | **(X)** | **364.6** |
| | Mill shapes and forms, except castings and forgings: | | | | |
| | Carbon steel: | | | | |
| 331011 | Bars and bar shapes ---- 1,000 s tons | (S) | 24.0 | (S) | 18.7 |
| 331012 | Sheet and strip ---- do | 4.8 | 3.9 | (S) | .8 |
| 331013 | Plates ---- do | 12.3 | 8.8 | (S) | 6.5 |
| 331017 | Wire and wire products ---- do | | | (D) | (D) |
| 331058 | All other carbon steel mill shapes and forms ---- do | 6.6 | 9.7 | (S) | 2.7 |
| | Alloy steel, except stainless: | | | | |
| 331021 | Bars and bar shapes ---- do | (S) | 24.1 | (S) | 21.3 |
| 331029 | All other alloy steel mill shapes and forms ---- do | *7.3 | 9.4 | (S) | 1.3 |
| | Stainless steel: | | | | |
| 331033 | Sheet and strip ---- do | 4.4 | 9.5 | (S) | .5 |
| 331050 | All other stainless steel mill shapes and forms ---- do | **1.7 | 5.9 | (S) | 2.1 |
| | Copper and copper-base alloy: | | | | |
| 335102 | Rod, bar, and mechanical wire, including extruded and/or drawn shapes ---- mil lb | 2.6 | 6.5 | (S) | 1.4 |
| 335152 | Pipe and tube ---- do | 6.0 | 7.1 | (S) | .4 |
| 335143 | Plate, sheet, and strip, including military cups and discs ---- do | | | (S) | .3 |

See footnotes at end of table.

## Table 7. **Materials Consumed by Kind: 1982 and 1977**—Con.

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

| 1982 material code | Material | 1982 Quantity[1] | 1982 Delivered cost (million dollars) | 1977 Quantity[1] | 1977 Delivered cost (million dollars) |
|---|---|---|---|---|---|
| | **INDUSTRY 3566, SPEED CHANGERS, DRIVES, AND GEARS**—Con. | | | | |
| 333122 | Copper and copper-base alloy refinery shapes ---- 1,000 s tons | 1.5 | 4.5 | (D) | (D) |
| | Scrap, excluding home scrap: | | | | |
| 190023 | Iron and steel ---- do | 25.6 | 4.7 | (S) | 1.3 |
| 190024 | Copper and copper-base alloy ---- do | | | .2 | .2 |
| | Castings (rough and semifinished): | | | | |
| 332011 | Iron (gray and malleable): | | | | |
| | Purchased ---- do | (S) | 39.5 | **48.4 | 47.2 |
| | Produced and consumed ---- do | (Z) | (X) | (S) | (X) |
| 332045 | Steel: | | | | |
| | Purchased ---- do | (S) | 16.1 | (S) | 10.6 |
| | Produced and consumed ---- do | – | (X) | (S) | (X) |
| 336100 | Aluminum and aluminum-base alloy: | | | | |
| | Purchased ---- mil lb | (S) | 6.5 | (S) | 5.0 |
| | Produced and consumed ---- do | .1 | (X) | (S) | (X) |
| 336200 | Copper and copper-base alloy: | | | | |
| | Purchased ---- do | (S) | 9.0 | *3.7 | 8.5 |
| | Produced and consumed ---- do | – | (X) | (S) | (X) |
| 336902 | Other nonferrous: | | | | |
| | Purchased ---- do | (S) | 4.1 | (X) | (6) |
| | Produced and consumed ---- do | – | (X) | (X) | (X) |
| 339915 | Metal powders ---- do | 4.0 | 3.6 | (S) | .1 |
| | Iron and steel forgings: | | | | |
| 346201 | Cold: | | | | |
| | Purchased ---- 1,000 s tons | (S) | 35.6 | **28.5 | 29.6 |
| | Produced and consumed ---- do | (Z) | (X) | (S) | (X) |
| 346209 | Other: | | | | |
| | Purchased ---- do | **18.5 | 34.1 | (S) | 25.6 |
| | Produced and consumed ---- do | .4 | (X) | (S) | (X) |
| 345001 | Bolts, nuts, screws, rivets, and screw machine products ---- | (X) | 14.7 | (X) | 8.0 |
| 354501 | Cutting tools for machine tools ---- | (X) | 15.6 | (X) | 13.6 |
| | Bearings: | | | | |
| 356218 | Ball ---- | (X) | 12.6 | (X) | 7.5 |
| 356201 | Roller ---- | (X) | 13.8 | (X) | 14.0 |
| 356295 | Balls, rollers, cages, collars, races, and other antifriction bearing components and parts ---- | (X) | (10) | (X) | 2.4 |
| 329101 | Grinding wheels and other abrasive products, except industrial diamonds ---- | (X) | 8.5 | (X) | 3.1 |
| | Electric motors and generators: | | | | |
| | Fractional horsepower electric motors (less than 1 hp): | | | | |
| 362110 | Timing motors, synchronous and subsynchronous: | | | | |
| | Purchased ---- thousands | (11) | (11) | (X) | (6) |
| | Produced and consumed ---- do | – | (X) | (X) | (X) |
| 362115 | Other fractional horsepower electric motors, excluding timing motors: | | | | |
| | Purchased ---- do | 11623.5 | 1155.3 | (X) | (6) |
| | Produced and consumed ---- do | – | (X) | (X) | (X) |
| 362120 | Integral horsepower motors and generators (1 hp or more): | | | | |
| | Purchased ---- do | (S) | 2.2 | (X) | (6) |
| | Produced and consumed ---- do | – | (X) | (X) | (X) |
| 970099 | All other materials and components, parts, containers, and supplies ---- | (X) | 1049.8 | (X) | 693.6 |
| 971000 | Materials, parts, containers, and supplies, n.s.k.[2] ---- | (X) | 23.0 | (X) | 38.3 |
| | **INDUSTRY 3567, INDUSTRIAL FURNACES AND OVENS** | | | | |
| | **Materials, parts, containers, and supplies ----** | **(X)** | **432.1** | **(X)** | **280.8** |
| | Mill shapes and forms, except castings and forgings: | | | | |
| | Carbon steel: | | | | |
| 331012 | Sheet and strip ---- 1,000 s tons | *33.3 | 20.3 | (S) | 9.6 |
| 331013 | Plates ---- do | (S) | 18.8 | **22.5 | 8.7 |
| 331015 | Structural shapes ---- do | *22.6 | 15.1 | (S) | 6.5 |
| 331059 | All other carbon steel mill shapes and forms ---- do | 5.3 | 7.2 | (S) | 1.7 |
| 331020 | Alloy steel, except stainless ---- do | **15.6 | 39.0 | (S) | 4.8 |
| | Stainless steel: | | | | |
| 331033 | Sheet and strip ---- do | *6.8 | 13.5 | *3.6 | 10.7 |
| 331050 | All other stainless steel mill shapes and forms ---- do | *5.9 | 12.7 | (S) | 3.4 |
| | Copper and copper-base alloy: | | | | |
| 335102 | Rod, bar, and mechanical wire, including extruded and/or drawn shapes ---- mil lb | *5.3 | 10.7 | (S) | 2.7 |
| 335143 | Plate, sheet, and strip, including military cups and discs ---- do | 7.0 | 9.5 | (S) | .6 |
| 335152 | Pipe and tube ---- do | 8.0 | 8.0 | (S) | 3.1 |
| | Aluminum and aluminum-base alloy: | | | | |
| 335301 | Sheet, plate, and foil ---- do | 6.2 | 7.6 | (S) | 1.0 |
| 335006 | All other (extruded shapes, wire, rod, bar, powder, pipe, tubing, etc.) ---- do | 10.9 | 6.5 | (S) | .5 |
| 332045 | Steel castings (rough and semifinished) ---- 1,000 s tons | (S) | 10.1 | (S) | 2.4 |
| 360101 | Electrical distribution, transmission, and control equipment ---- | (X) | 44.9 | (X) | 30.7 |
| 343371 | Oil and gas burners for industrial furnaces, ovens, and kilns ---- | (X) | 7.8 | (X) | (12) |
| 356751 | Electric heating elements for industrial furnaces, ovens, and kilns ---- | (X) | 17.0 | (X) | (12) |
| 356753 | Parts specifically designed for industrial furnaces, ovens, and kilns (not listed above) ---- | (X) | 33.0 | (X) | (12) |
| 970099 | All other materials and components, parts, containers, and supplies ---- | (X) | 104.2 | (X) | 12139.0 |
| 971000 | Materials, parts, containers, and supplies, n.s.k.[2] ---- | (X) | 46.2 | (X) | 55.4 |

See footnotes at end of table.

## Table 7. **Materials Consumed by Kind: 1982 and 1977**—Con.

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

| 1982 material code | Material | 1982 | | 1977 | |
|---|---|---|---|---|---|
| | | Quantity[1] | Delivered cost (million dollars) | Quantity[1] | Delivered cost (million dollars) |
| | **INDUSTRY 3568, POWER TRANSMISSION EQUIPMENT, N.E.C.** | | | | |
| | **Materials, parts, containers, and supplies** | (X) | 649.7 | (X) | 550.5 |
| | Mill shapes and forms, except castings and forgings: | | | | |
| | Carbon steel: | | | | |
| 331011 | Bars and bar shapes, 1,000 s tons | **85.9 | 56.6 | *70.0 | 32.1 |
| 331012 | Sheet and strip, do | **58.1 | 34.6 | 86.2 | 38.3 |
| 331013 | Plates, do | 64.2 | 28.9 | **43.0 | 15.1 |
| 331017 | Wire and wire products, do | 29.5 | 13.8 | 10.1 | 4.5 |
| 331058 | All other carbon steel mill shapes and forms, do | 23.4 | 8.3 | 14.2 | 6.7 |
| | Alloy steel, except stainless: | | | | |
| 331021 | Bars and bar shapes, do | **17.2 | 17.7 | (S) | 19.7 |
| 331029 | All other alloy steel mill shapes and forms, do | (S) | 9.0 | 6.5 | 4.8 |
| | Stainless steel: | | | | |
| 331033 | Sheet and strip, do | *3.7 | 9.8 | 2.1 | 4.1 |
| 331050 | All other stainless steel mill shapes and forms, do | (S) | 8.2 | (S) | 3.1 |
| | Copper and copper-base alloy: | | | | |
| 335102 | Rod, bar, and mechanical wire, including extruded and/or drawn shapes, mil lb | (S) | 5.7 | 3.1 | 3.6 |
| 335152 | Pipe and tube, do | 3.4 | 3.1 | (D) | ([13]) |
| 335143 | Plate, sheet, and strip, including military cups and discs, do | 4.8 | 3.2 | (S) | [13]5.1 |
| 333122 | Copper and copper-base alloy refinery shapes, 1,000 s tons | 7.1 | 9.5 | 6.4 | 10.3 |
| | Scrap, excluding home scrap: | | | | |
| 190023 | Iron and steel, do | 11.2 | 1.8 | (D) | ([14]) |
| 190024 | Copper and copper-base alloy, do | 3.7 | 3.7 | (S) | [14]5.2 |
| | Castings (rough and semifinished): | | | | |
| 332011 | Iron (gray and malleable): | | | | |
| | Purchased, do | **72.7 | 68.9 | 77.5 | 66.4 |
| | Produced and consumed, do | - | (X) | (S) | (X) |
| 332045 | Steel: | | | | |
| | Purchased, do | ([15]) | ([15]) | (S) | 6.8 |
| | Produced and consumed, do | - | (X) | (S) | (X) |
| 336100 | Aluminum and aluminum-base alloy: | | | | |
| | Purchased, mil lb | *11.2 | 14.2 | *5.1 | 7.2 |
| | Produced and consumed, do | .1 | (X) | (S) | (X) |
| 336200 | Copper and copper-base alloy: | | | | |
| | Purchased, do | *21.2 | 18.3 | (S) | 5.6 |
| | Produced and consumed, do | - | (X) | (S) | (X) |
| 336902 | Other nonferrous: | | | | |
| | Purchased, do | [15]*22.1 | [15]21.4 | (X) | ([10]) |
| | Produced and consumed, do | - | (X) | (X) | (X) |
| 339915 | Metal powders, do | (S) | 5.5 | (S) | 4.3 |
| | Iron and steel forgings: | | | | |
| 346201 | Cold: | | | | |
| | Purchased, 1,000 s tons | (S) | 22.6 | **40.8 | 29.0 |
| | Produced and consumed, do | - | (X) | (S) | (X) |
| 346209 | Other: | | | | |
| | Purchased, do | 17.1 | 25.9 | 22.0 | 23.0 |
| | Produced and consumed, do | - | (X) | (S) | (X) |
| 345001 | Bolts, nuts, screws, rivets, and screw machines products | (X) | 25.1 | (X) | 8.6 |
| 354501 | Cutting tools for machine tools | (X) | 11.3 | (X) | 6.7 |
| | Bearings: | | | | |
| 356218 | Ball | (X) | 18.5 | (X) | 13.7 |
| 356201 | Roller | (X) | 15.3 | (X) | 10.3 |
| 356295 | Balls, rollers, cages, collars, races, and other antifriction bearing components, and parts | (X) | 11.6 | (X) | 2.7 |
| 329101 | Grinding wheels and other abrasive products, except industrial diamonds | (X) | 3.2 | (X) | 1.5 |
| | Electric motors and generators: | | | | |
| | Fractional horsepower electric motors (less than 1 hp): | | | | |
| 362110 | Timing motors, synchronous and subsynchronous: | | | | |
| | Purchased, thousands | 22.3 | 2.1 | (X) | ([10]) |
| | Produced and consumed, do | - | (X) | (X) | (X) |
| 362115 | Other fractional horsepower electric motors, excluding timing motors: | | | | |
| | Purchased, do | (S) | 6.3 | (X) | ([10]) |
| | Produced and consumed, do | - | (X) | (X) | (X) |
| 362120 | Integral horsepower motors and generators (1 hp or more): | | | | |
| | Purchased, do | (S) | 3.4 | (X) | ([10]) |
| | Produced and consumed, do | - | (X) | (X) | (X) |
| 970099 | All other materials and components, parts, containers, and supplies | (X) | 124.3 | (X) | [10]154.2 |
| 971000 | Materials, parts, containers, and supplies, n.s.k.[2] | (X) | 37.9 | (X) | 57.8 |
| | **INDUSTRY 3569, GENERAL INDUSTRIAL MACHINERY, N.E.C.** | | | | |
| | **Materials, parts, containers, and supplies** | (X) | 1 679.3 | (X) | 1 027.1 |
| | Mill shapes and forms, except castings and forgings: | | | | |
| | Carbon steel: | | | | |
| 331011 | Bars and bar shapes, 1,0000 s tons | (S) | 37.7 | (S) | 17.6 |
| 331012 | Sheet and strip, do | (S) | 26.3 | **46.0 | 22.4 |
| 331013 | Plates, do | **60.3 | 33.8 | (S) | 16.2 |
| 331015 | Structural shapes, do | (S) | 33.8 | (S) | 10.1 |
| 331017 | Wire and wire products, do | (S) | 13.2 | *7.5 | 3.7 |
| 331019 | All other carbon steel shapes and forms, do | (S) | 18.4 | (S) | 6.5 |
| | Alloy steel, except stainless: | | | | |
| 331021 | Bar and bar shapes, do | (S) | 10.1 | (S) | 6.0 |
| 331029 | All other alloy steel mill shapes and forms, do | *107.0 | 8.2 | *2.8 | 3.3 |
| | Stainless steel: | | | | |
| 331033 | Sheet and strip, do | (S) | 15.0 | (S) | 14.9 |
| 331050 | All other stainless steel mill shapes and forms, do | (S) | 27.0 | (S) | 16.9 |

See footnotes at end of table.

## Table 7. **Materials Consumed by Kind: 1982 and 1977**—Con.

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

| 1982 material code | Material | 1982 Quantity[1] | 1982 Delivered cost (million dollars) | 1977 Quantity[1] | 1977 Delivered cost (million dollars) |
|---|---|---|---|---|---|
| | **INDUSTRY 3569, GENERAL INDUSTRIAL MACHINERY, N.E.C.**—Con. | | | | |
| | Mill shapes and forms, except castings and forgings —Con. | | | | |
| | Copper and copper-base alloy: | | | | |
| 335102 | Rod, bar, and mechanical wire, including extruded and/or drawn shapes ---- mil lb | (S) | 8.8 | (S) | 4.2 |
| 335143 | Plate, sheet, and strip, including military cups and discs ---- do | *4.1 | 6.3 | 2.9 | .9 |
| 335152 | Pipe and tube ---- do | *21.6 | 9.4 | (S) | 1.9 |
| | Aluminum and aluminum-base alloy: | | | | |
| 335301 | Sheet, plate, and foil ---- do | **37.0 | 23.5 | **6.9 | 6.9 |
| 335405 | Extruded shapes, including extruded rod, bar, pipe, tube, etc. ---- do | (S) | 12.1 | (S) | 7.0 |
| 335008 | All other aluminum mill shapes and forms (wire, rolled rod and bar, powder, welded tubing, etc.) ---- do | **6.6 | 11.2 | (S) | 2.3 |
| 335609 | Nonferrous metal mill shapes and forms, except copper and aluminum ---- | (X) | 10.4 | (X) | 2.1 |
| | Primary metals and scrap: | | | | |
| 331051 | Pig iron, excluding silvery iron ---- 1,000 s tons | 15.0 | 3.8 | (S) | .3 |
| 190023 | Iron and steel scrap, excluding home scrap ---- do | 7.0 | 5.7 | | |
| | Castings (rough and semifinished): | | | | |
| 332011 | Iron (gray and malleable): | | | | |
| | Purchased ---- do | (S) | 38.0 | **28.6 | 26.8 |
| | Produced and consumed ---- do | 1.1 | (X) | (S) | (X) |
| 332045 | Steel: | | | | |
| | Purchased ---- do | (S) | 28.6 | (S) | 11.5 |
| | Produced and consumed ---- do | (Z) | (X) | (S) | (X) |
| 336100 | Aluminum and aluminum-base alloy: | | | | |
| | Purchased ---- mil lb | (S) | 22.7 | (S) | 13.4 |
| | Produced and consumed ---- do | .1 | (X) | (S) | (X) |
| 336200 | Copper and copper-base alloy: | | | | |
| | Purchased ---- do | (S) | 17.8 | **3.7 | 5.8 |
| | Produced and consumed ---- do | - | (X) | (S) | (X) |
| 336902 | Other nonferrous: | | | | |
| | Purchased ---- do | (S) | 7.4 | (S) | ([16]) |
| | Produced and consumed ---- do | - | (X) | (S) | (X) |
| 344301 | Metal tanks, heat exchangers, steam condensers, and other boiler-shop products; fabricated steel plate weldments ---- | (X) | 38.7 | (X) | 18.3 |
| 345001 | Bolts, nuts, screws, rivets, and screw machine products ---- | (X) | 22.0 | (X) | 10.4 |
| 346901 | Metal-stampings ---- | (X) | 23.6 | (X) | 7.5 |
| 349402 | Fabricated metal pipe, valves, and pipe fittings ---- | (X) | 35.9 | (X) | 21.8 |
| | Bearings: | | | | |
| 356218 | Ball ---- | (X) | 10.4 | (X) | 2.6 |
| 356201 | Roller ---- | (X) | 5.5 | (X) | 2.1 |
| 356810 | Plain bearings and bushings ---- | (X) | 9.4 | (X) | 1.2 |
| 356601 | Speed changers, drives, and gears ---- | (X) | 20.2 | (X) | 8.7 |
| 356101 | Pumps and pump parts ---- | (X) | 21.3 | (X) | 9.6 |
| 356301 | Air and gas compressors, except refrigeration compressors ---- | (X) | 16.3 | (X) | 6.8 |
| 349421 | Fluid power (hydraulic and pneumatic) valves ---- | (X) | 15.2 | (X) | ([16]) |
| 359921 | Fluid power (hydraulic and pneumatic) cylinders and rotary actuators ---- | (X) | 13.3 | (X) | ([16]) |
| 356120 | Fluid power (hydraulic only) fluid power pumps and motors ---- | (X) | 10.9 | (X) | ([16]) |
| 356921 | Filters for hydraulic fluid power systems ---- | (X) | 8.9 | (X) | ([16]) |
| 360101 | Electrical transmission, distribution, and control equipment ---- | (X) | 49.1 | (X) | 20.0 |
| | Electric motors and generators: | | | | |
| 362115 | Fractional horsepower electric motors, (less thsn 1 hp), excluding timing motors: | | | | |
| | Purchased ---- thousands | (S) | 16.0 | (S) | 12.6 |
| | Produced and consumed ---- do | 1.2 | (X) | (S) | (X) |
| 362120 | Integral horsepower motors and generators (1 hp or more): | | | | |
| | Purchased ---- do | (S) | 27.0 | (S) | 14.3 |
| | Produced and consumed ---- do | .5 | (X) | (S) | (X) |
| 970099 | All other materials and components, parts, containers, and supplies ---- | (X) | 495.3 | (X) | [16]372.1 |
| 971000 | Materials, parts, containers, and supplies, n.s.k.[2] ---- | (X) | 411.1 | (X) | 318.4 |

[1]For some establishments, data have been estimated from central unit values which are based on quantity-cost relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: * 10 to 19 percent estimated; ** 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).

[2]Total cost of materials of establishments that did not report detailed materials data, including establishments that were not mailed a form.

[3]For 1977, material codes 336902, 346701, 265001, 304101, 329300, and 357301 were combined with material code 970099.

[4]For 1977, material code 331013 was combined with material code 331012 to avoid disclosing data for individual companies.

[5]For 1982, material codes 336200 and 336902 were combined to avoid disclosing data for individual companies.

[6]For 1977, material codes 336902, 362110, 362115, and 362120 were combined with material code 970099 to avoid disclosing data for individual companies.

[7]For 1982, material codes 333122 and 339915 are combined with material code 970099 to avoid disclosing data for individual companies.

[8]For 1977, the delivered costs for material codes 332045, 336902, and 304101 were included with material code 970099.

[9]For 1977, material codes 336902, 242101, and 307903 were included in material code 970099.

[10]For 1982, material code 356295 is included with material code 970099 to avoid disclosing data for individual companies.

[11]For 1982, material codes 362110 and 362115 are combined to avoid disclosing data for individual companies.

[12]For 1977, delivered costs for material codes 343371, 356751, and 356753 were included with material code 970099.

[13]For 1977, material code 335152 was combined with material code 335143.

[14]For 1977, material code 190023 was combined with material code 190024.

[15]For industry 3568, material codes 332045 and 336902 were combined in 1982 to avoid disclosure of individual companies.

[16]For 1977, material codes 336902, 349421, 359921, 356120, and 356921 were combined and reported with material code 970099.

# APPENDIX A.
# Explanation of Terms

This appendix is in two sections. Section 1 includes items which were requested of all establishments that were mailed census of manufactures forms including annual survey of manufactures (ASM) forms. Note that this section also includes several items (number of establishments and companies, value added, classes of products, and specialization and coverage ratios) that were not included on the report forms but were derived from information collected on the forms. Section 2 covers supplementary items that were requested only from establishments included in the ASM sample. Results of the supplementary ASM inquiries are included in tables 3c and 3d of this report.

## SECTION 1. ITEMS COLLECTED OR DERIVED BASED ON ALL CENSUS OF MANUFACTURES (INCLUDING ASM) REPORT FORMS

**Number of establishments and companies**—As discussed in the Introduction, a separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operates at different physical locations, even if the individual locations are producing the same line of goods, a separate report was requested for each location. If the company operates in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on the number of custodial employees, capital expenditures, inventories, or any shipments from inventories during the portion of the year the plant was in operation.

In this report, data are shown for establishments in operation at any time during the year. A comparison with the number of establishments in operation at the end of the year will be provided in the Introduction to Part 1 of the General Summary subject report.

**Employment and related items**—The regular report forms requested separate information on production workers as of a payroll period for each quarter of the year and on other employees as of the payroll period which included the 12th of March.

**All employees**—This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period ending nearest the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

**Production workers**—This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

**All other employees**—This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It includes sales (including driver salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office function, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment who are engaged in the construction of major additions or alterations to the plant and who are utilized as a separate work force.

In addition to reports sent to operating manufacturing establishments, information on employment during the payroll period which included March 12 and annual payrolls was also requested of auxiliary units (e.g., administrative offices, warehouses, and research and development laboratories) of multiestablishment companies. However, these figures are not included in the totals for individual industries shown in this report. They are included in the general summary and geographic area reports and in the final bound volumes as a separate category.

**Payrolls**—This item includes the gross earnings of all employees on the payroll of operating manufacturing establishments paid in the calendar year 1982. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, all bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' Social Security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers

of corporations, but excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payroll of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' Social Security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' supplemental labor costs, both those required by Federal and State laws and those incurred voluntarily or as part of collective bargaining agreements. (Supplemental labor costs are explained later in this appendix.)

As in the case of employment figures, the payrolls of separate auxiliary units of multiestablishment companies are not included in the totals for individual industries or industry groups.

**Production-worker hours**—This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

**Cost of materials**—This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

The important components of this cost item are (1) all raw materials, semifinished goods, parts, components, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year, (2) electric energy purchased, (3) fuels consumed for heat, power, or the generation of electricity, (4) work done by others on materials or parts furnished by manufacturing establishments (contract work), and (5) products bought and resold in the same condition. (See discussion of duplication of data below.)

**Specific materials consumed**—In addition to the total cost of materials, which every establishment was required to report, information was also collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. Information on the specific materials consumed is shown in table 7 if appropriate to the industry. Establishments consuming less than a specified amount (usually $10,000) of a specific material were not requested to report consumption of that material separately. Also, the cost of materials for the small establishments for which either administrative records or short forms were used was imputed as "not specified by kind." (See the Introduction for the importance of administrative records in the industry.)

**Value of shipments**—This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and resold without further processing. Included are all items made by or for the establishments from materials owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of "all other costs" (including company overhead) and profit. (See discussion of duplication of data below.)

**Individual products**—As in previous censuses, data were collected for almost all industries on the quantity and value of individual products shipped. In the 1982 census program, information was collected on the output of approximately 11,000 individual product items. The term "product," as used in the census of manufactures, represents the finest level of detail for which output information was requested. Consequently, it is not necessarily synonymous with the term "product" as used in the marketing sense. In some cases it may be much more detailed and, in other cases, it is more aggregative. For example, "pharmaceutical preparations" was distributed into over 100 items; whereas, "motor gasoline" was reported as a single item.

Approximately 6,000 of the product items were listed separately on the 1982 census report forms. Data for about 5,000 products were obtained in the monthly, quarterly, or annual surveys comprising the Current Industrial Reports series of the Census Bureau. Totals for the year 1982 for these items, as derived from the commodity surveys, are shown in the "products shipped" table (table 6a) together with the tieline total value collected in the census for reconciliation purposes.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1977 information is presented for most products.

Typically, both quantity and value of shipments information was collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers was also collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant was collected. Typically, the information on production was also collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

**Classes of products**—To summarize the product information, the separate products were aggregated into classes of products that, in turn, were grouped into all primary products of each industry. The code structure used is a seven-digit number for the

individual product, a five-digit number for the class of product, and a four-digit number for the total primary products in an industry. (See Introduction, Industry Classification of Establishments, for application of the coding structure to the assignment of SIC codes for establishments.)

In the 1982 census, the 11,000 products were grouped into approximately 1,500 separate classes on the basis of general similarity of manufacturing processes, types of materials used, and the like. However, the grouping of products was affected by the economic significance of the class and, in some cases, dissimilar products were grouped because the products were not sufficiently significant to warrant separate classes.

**Duplication in cost of materials and value of shipments**—The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication, since the products of some industries are used as materials by others. With some important exceptions, such as for motor vehicles and parts, this duplication is not significant at the four-digit industry level. However, it is significant at the two-digit and three-digit industry group level because these totals often include industries that represent successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the "Food" group and the addition of pulp mills to paper mills in the "Paper and Allied Products" group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the census of manufactures.

**Value added by manufacture**—This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

Because of the change in instructions for reporting inventories for 1982, the 1982 figure for value added is not strictly comparable to prior-year data. This is explained more fully in the inventories section below.

"Value added" avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

**New and used capital expenditures**—For establishments in operation and establishments under construction but not yet in operation, manufacturers were asked to report their new expenditures for (1) permanent additions and major alterations to manufacturing establishments, and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

The totals for new expenditures exclude that portion of expenditures leased from nonmanufacturing concerns, new facilities owned by the Federal Government but operated under contract by private companies, and plant and equipment furnished to the manufacturer by communities and nonprofit organizations. Also excluded are expenditures for used plant and equipment (although reported in the census), expenditures for land, and cost of maintenance and repairs charged as current operating expenses.

Manufacturers were also requested to report the value of all used buildings and equipment purchased during the year at the purchase price. For any equipment or structure transferred to the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. Furthermore, if the establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported under used capital expenditures.

Total expenditures for used plant and equipment is a universe figure; i.e., it is collected on all census forms. However, the breakdown of this figure between expenditures for used buildings and other structures and expenditures for used machinery and equipment is collected only on the ASM form and is subject to sampling error (see table 3d). The data for total new capital expenditures, new building expenditures, and new machinery expenditures, as well as the data for total used expenditures, are shown in both tables 3a and 3d. The figure in table 3a is a census universe total and may differ from the results of the ASM sample shown in table 3d. Since the figures in table 3d are subject to sampling error, they are not considered as reliable as the universe figures.

**End-of-year inventories**—Respondents were asked to report their 1981 and 1982 end-of-year inventories at cost or market. Effective with the 1982 Economic Censuses, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). In 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Because of this change in reporting instructions, the 1982 data for inventories and value added by manufacture included in the tables of this report are not comparable to the prior-year data shown in table 1a of this report and in historical census of manufactures and annual survey of manufactures publications. Inventories and value added data estimated on a basis comparable to the historical data, using the reported information for 1982, are shown in footnote 4 of table 1a. However, the end-of-1981 figure shown in this footnote may differ from the corresponding value published as part of the 1981 Annual Survey of Manufactures.

This difference at the four-digit SIC level is due primarily to the effects of industry shifts. As described in the Industry Classification of Establishments section of the Introduction, ASM noncertainty plants are allowed to shift from one industry to another in a census year; whereas, they are "frozen" in a particular industry in ASM years. Other explanations for this difference include the effects of sampling and processing errors and revisions to end-of-1981 data reported by respondents.

In using inventory data by stage of fabrication for "all industries" and at the two-digit industry level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by another establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw

materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for individual industries, industry groups, and "all manufacturing," which are aggregates of figures reported by establishments in specified industries.

**Specialization and coverage ratios**—These items are not collected on the report forms but are derived from the data shown in table 5b. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

As noted in the Introduction, an establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in tables 1a through 5a and data on product shipments shown in tables 6a through 6c.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## SECTION 2. ITEMS COLLECTED ONLY ON ASM REPORT FORMS

**Supplemental labor costs**—Supplemental labor costs are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees. While the excluded items do benefit employees and all or part of their cost generally is similar to the items covered in the ASM labor costs statistics, accounting records do not generally provide reliable figures on net employee benefits of these types.

**Cost of purchased services**—ASM establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, and communication services. Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment, such as painting, roof repairs, replacing parts, and overhauling equipment. Such payments made to other establishments of the same company and for repair and maintenance of any leased property are also included. Extensive repairs or reconstruction that were capitalized are considered capital expenditures for used buildings and machinery and are, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force are also excluded.

The response coverage ratio shown in table 3d for each of the three types of purchased services listed above is a measure of the extent to which respondents reported for each item. It is derived for each item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight; see section 3) for those ASM establishments that reported the specific inquiry to the weighted total employment for all ASM establishments classified in the industry.

**Electric energy used for heat and power**—Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy and quantity of generated-less-sold electric energy were collected only on the ASM forms. The cost and quantity of purchased electric energy represent the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

**Beginning- and end-of-year depreciable assets**—The data encompass all fixed depreciable assets on the books of establishments at the beginning and at the end of the year. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets, including inventories and intangible assets, such as patent rights and royalties. Also excluded are land and depletable assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year, rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress. In addition, respondents were requested to make certain that assets at the beginning of the year plus new and used capital expenditures, less retirements, equalled assets at the end of the year.

**New and used capital expenditures**—The data for total new capital expenditures, new building expenditures, new machinery expenditures, and total used capital expenditures are collected on all census forms. However, the breakdown between expenditures for used buildings and other structures and expenditures for used machinery and equipment is collected only on the ASM form. (See further explanation on capital expenditures in section 1.)

**Breakdown of new capital expenditures for machinery and equipment**—ASM establishments were requested to separate their capital expenditures for new machinery and equipment into (1) automobiles, trucks, etc., for highway use, (2) computers and peripheral data processing equipment, and (3) all other.

The category "automobiles, trucks, etc., for highway use" is intended to measure expenditures for vehicles designed for highway use that were acquired through a purchase or lease-purchase agreement. Vehicles normally operating off public highways (vehicles specifically designed to transport materials, property, or equipment on mining, construction, logging, and petroleum development projects) are excluded from this item.

The "not specified by kind" or n.s.k. item for expenditures for new machinery and buildings, shown in table 3d, represents the total machinery and equipment expenditures for establishments that did not break down their expenditures for the three specific categories. This means that for most industries the specific categories are understated.

**Retirements**—Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during 1982. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent was also requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

**Rental payments**—This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets, and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company, and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

**Depreciation charges**—This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

# APPENDIX B.
# Annual Survey of Manufactures (ASM) Sampling and Estimating Methodologies

## DESCRIPTION OF SURVEY SAMPLE

The Annual Survey of Manufactures (ASM) contains two components. The mail portion of the survey is a probability sample of about 55,000 manufacturing establishments selected from a total of about 225,000 establishments. These 225,000 establishments represent all manufacturing establishments of multiunit companies and all single-unit manufacturing establishments with five employees or more tabulated in the 1977 Census of Manufactures. This mail portion is supplemented by a Social Security Administration list of new manufacturing establishments opened after 1977. The individual establishments were defined as the sampling unit for this sample. This is a change from the previous ASM sample when companies were used as the sampling unit. The implication of this change is that the probability of selection of any establishment relates only to the size of the establishment itself and is independent of the size of the company with which the establishment is affiliated. The efficiencies associated with the change to an establishment sample have made it possible to reduce the mail sample panel from 70,000 establishments in 1978 to 55,000 establishments in the current panel.

The nonmail portion of the survey includes all single-unit establishments that were tabulated with less than five employees in the 1977 Census of Manufactures. Although this portion contained approximately 125,000 establishments, it accounted for less than 2 percent of the estimate for total value of shipments at the total manufacturing level. This portion was not sampled; rather, the data for every establishment in this group were estimated based on selected information obtained annually from the administrative records of other Federal agencies. This administrative record information, which includes payroll, total employment, industry classification, and physical location of the establishment, was obtained under special conditions, which safeguard the confidentiality of both tax and census records. Estimates for data for these small establishments were developed using industry averages in conjunction with the administrative information.

The corresponding estimates for the mail and nonmail establishments were added together, along with the adjusted base-year differences as defined in Description of Estimating Procedures below. The remaining description of the survey sample relates only to the mail portion of the ASM sample.

All establishments with 250 employees or more in the 1977 census were included in the survey panel with certainty. These establishments collectively account for approximately 65 percent of the total value of shipments for manufacturing establishments in the 1977 census. Smaller establishments were sampled with probabilities ranging from 1.000 down to 0.005 in accordance with mathematical theory for optimum allocation of a sample.

The probabilities of selection assigned to the smaller establishments were proportional to measures of size determined for each establishment. For establishments included in the 1977 Census of Manufactures, the measure of size depended directly upon each establishment's 1977 product class values and the historic variability of the year-to-year shipments of each product class. Roughly equivalent measures of size were assigned to postcensus birth establishments based on their industry codes and anticipated payroll and employment.

The method of assigning measures of size was used in order to maximize the precision (that is, minimize the variance of estimates of the year-to-year change) in the value of product class shipments. Implicitly, it also gave weight to differences in employment, value added, and other general statistics, for these are highly correlated with value of shipments. Individual sample selection probabilities were obtained by multiplying each establishment's final measure of size by an overall sampling fraction coefficient calculated to yield a total expected sample size.

The sample selection procedure gave each establishment in the sampling frame an independent chance of selection. This method of independent selection permits the rotation of establishments into and out of a given sample panel without introducing a bias into the survey estimates.

## DESCRIPTION OF ESTIMATING PROCEDURES

Most of the ASM estimates for the years 1978-1981 were computed using a modified "difference estimate" formula. For each item, a base-year difference was developed. This base-year difference is equal to the difference between the 1977 census published number for an item total and the linear ASM estimate of the total for 1977. The ASM linear estimate was obtained by multiplying each sample establishment's data by its sample weight (the reciprocal of its probability of selection) and summing the weighted values.

This base-year difference was then adjusted to reflect the estimated growth at the four-digit or, in the case of product classes, five-digit based Standard Industrial Classification (SIC) level from 1977 to the year of the survey; for example, 1981. It should be noted that due to processing constraints, the growth factors lagged one year; i.e., if 1981 is the survey year, they were not based on the estimated growth from 1977 to 1981 but rather the growth from 1977 to 1980. This one-year lag had negligible effect on the estimates, particularly at the total manufacturing level where the adjusted base-year difference accounted for less than 1 percent of the estimate for total value of shipments.

These adjusted base-year differences were then added to the corresponding current-year linear estimates, which include the sum of the estimates for the mail and nonmail establishments, to produce the estimates for the years 1978-1981. Estimates developed by this procedure usually are far more reliable than comparable linear estimates developed from the current sample data alone.

The 1982 sample data included in table 3d were also developed using difference estimates. However, since the universe totals for the census year (1977 or 1982) were not known, a modification of the procedure described above was necessary. For each item in table 3d, except purchased services and breakdown of expenditures for new machinery and equipment (see further description in appendix A, section 2), linear

estimates of the publication totals from the ASM mail sample were adjusted by the difference between imputed census totals and the corresponding ASM mail sample estimates of these imputed totals. These imputed totals are obtained by applying industry average ratios to control item values at the establishment level. For example, an imputed total beginning assets figure is obtained by multiplying each establishment's total value of shipments by the industry (four-digit SIC) average for the ratio of beginning assets to shipments.

Separate estimates for the nonmail establishments were not developed. However, their contribution to the publication estimates is reflected in the difference adjustment.

The method of inventory valuation percentages included in table 3c was developed using both complete census information and ASM estimates. The percentages for the four major categories (LIFO, non-LIFO, valuation method not reported, and LIFO reported without associated value and reserve) were derived from the complete census and correspond to the values included in table 3d. The percentages for the specific non-LIFO methods of valuations (FIFO, average cost, specific costs, etc.) are ratio estimates developed from the ASM in conjunction with the census universe estimate for the total of the non-LIFO methods.

## QUALIFICATIONS OF THE DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sampled lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the differences between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of the estimates.

The particular sample selected for the ASM is one of a large number of similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretical, comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected statistics in this report. Except for table 3c, they are presented in the form of relative standard errors, the standard errors divided by the estimated values to which they refer. In table 3c, ''absolute'' standard errors of the estimates are presented.

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete coverage value would be included in the range:

1. From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.
2. From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.
3. From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown as 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total and about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors would also occur if a complete canvass were to be conducted under the same conditions as the survey.

Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected in the course of the Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or only moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown.

The concept of complete coverage under the conditions prevailing for the ASM is not identical to the complete coverage of the census of manufactures, as the censuses have been conducted. Nearly all types of operational errors that affect the ASM also occur in the censuses. The ASM and the censuses, are conducted under quite different conditions, and operational errors can be better controlled in the ASM than in the censuses. As a result, for many of the census figures, the errors are of the same order of size as the total errors of the corresponding annual survey estimates. The differences between the census and ASM operating conditions also disturb, to some degree, the comparability of the ASM and census data.

Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be of limited reliability. However, the figure may be combined with higher-level totals, creating a broader aggregate, which then may be of acceptable reliability.

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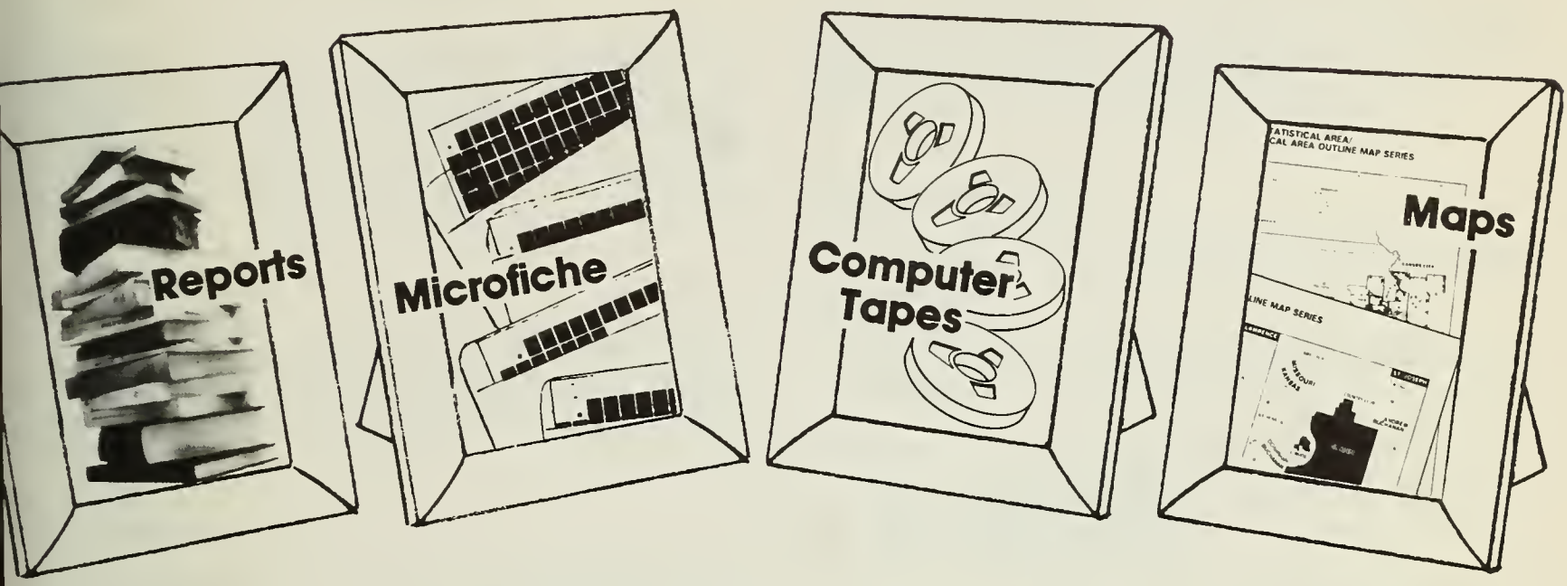


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For each industry, data on value of shipments, value added by manufacture, capital expenditures, employment, and payroll are shown by employment-size class of establishment and degree of primary product specialization. Statistics are given on production of specific products and consumption of energy and various materials by industry.

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  - Part 2. Nebraska to Wyoming

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All published data also are available on microfiche.

### Computer Tapes

Selected data—generally detailed information by industry and/or geographic area—also are available on public-use computer tapes. For the selected data, these tapes will provide the same information found in the final reports. Public-use computer tapes are available for users who wish to summarize, rearrange, or process large amounts of data. These tapes, with corresponding technical documentation, are sold by Data User Services Division, Customer Services (Tapes), Bureau of the Census, Washington, D.C. 20233.

## OTHER ECONOMIC CENSUSES REPORTS

Data on retail trade, wholesale trade, service industries, construction industries, mineral industries, enterprise statistics, minority-owned businesses, women-owned businesses, and transportation also are issued as part of the 1982 Economic Censuses. A separate series of reports covers the censuses of outlying areas—Puerto Rico, Virgin Islands of the United States, Guam, and the Northern Mariana Islands. All published reports and microfiche are sold by the Superintendent of Documents, U. S. Government Printing Office. Appropriate announcements and order forms describing these products are available free of charge from Data User Services Division, Customer Services (Publications), Bureau of the Census, Washington, D.C. 20233.

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